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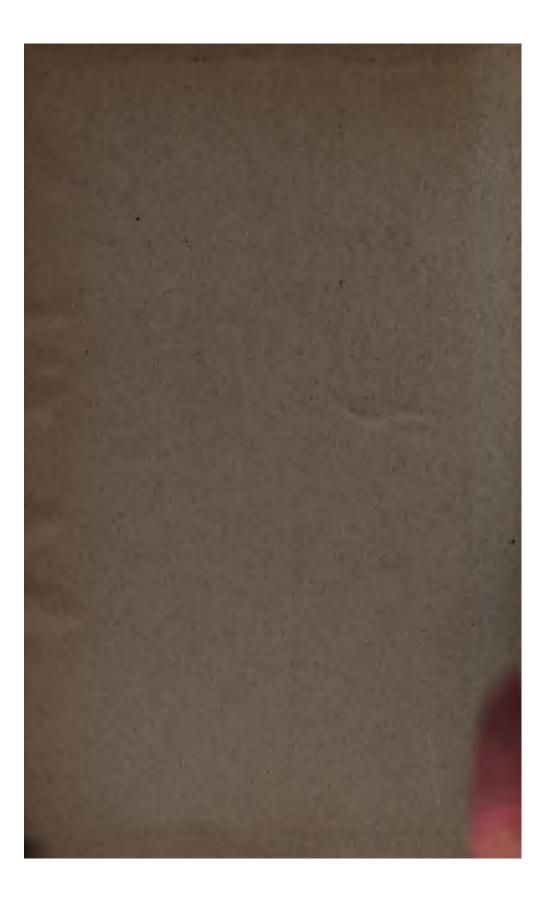
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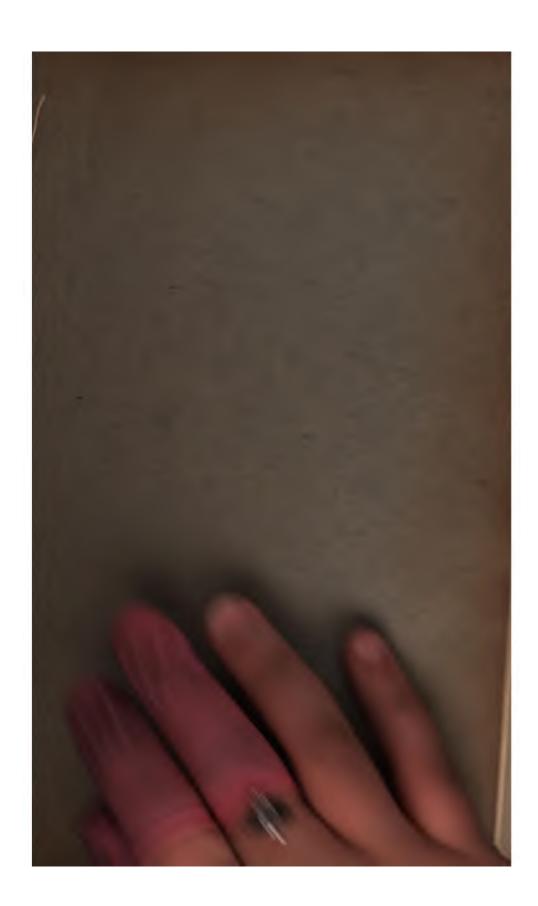
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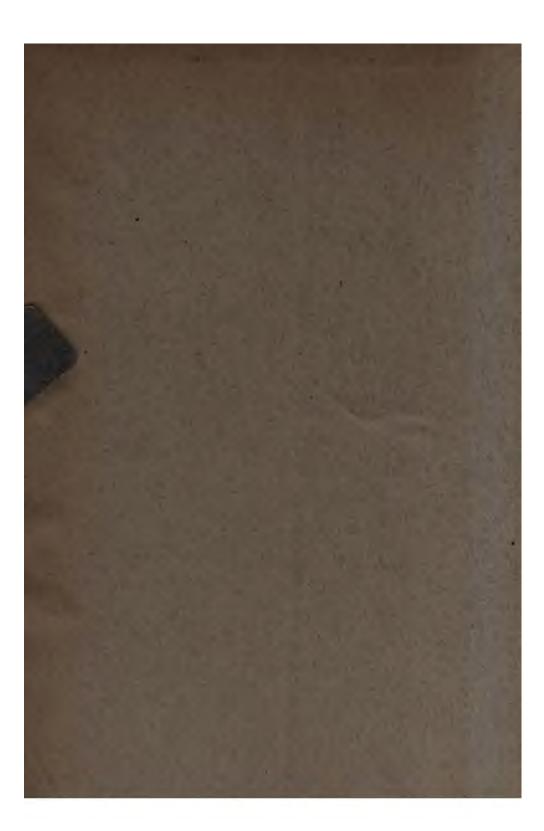
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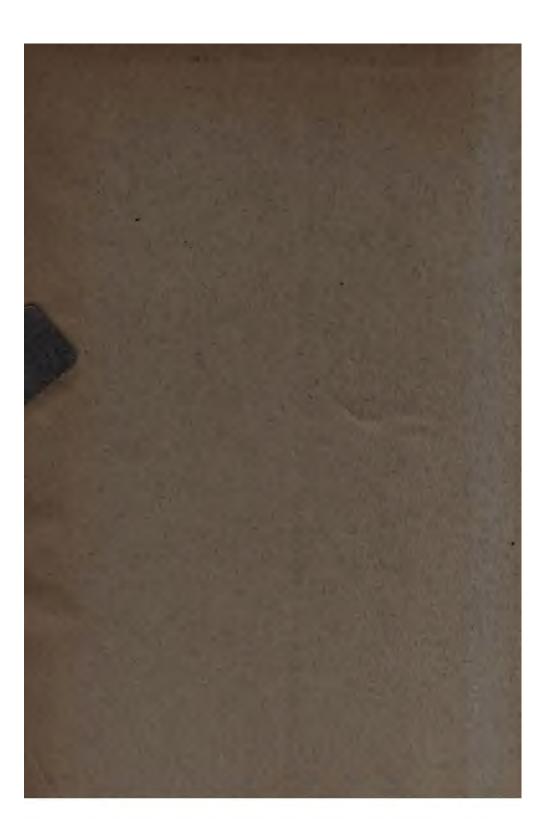




















TWELFTH ANNUAL REPORT

OF THE

DEPARTMENT OF

PUBLIC WORKS

TO THE

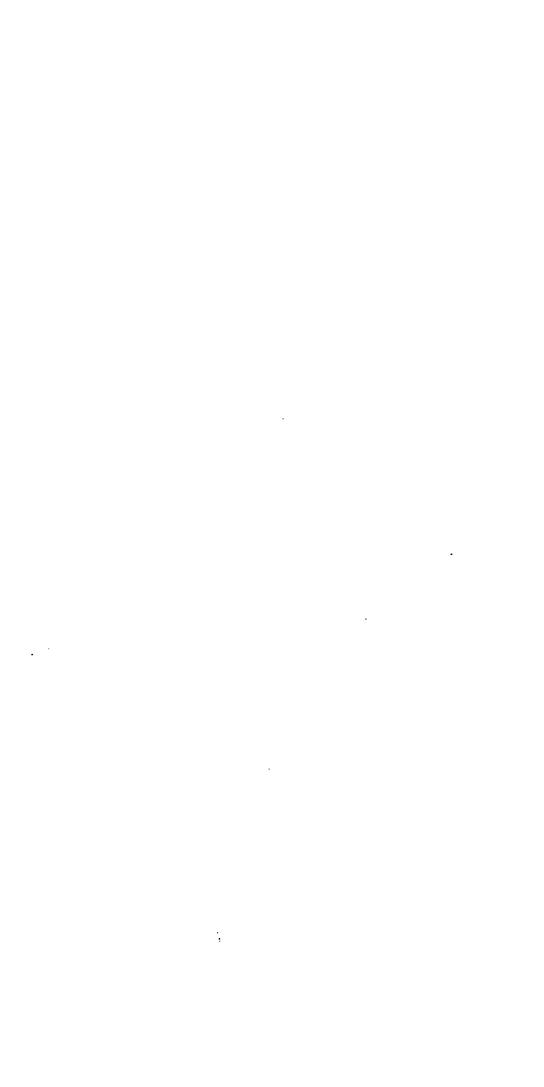
CITY COUNCIL OF THE CITY OF CHICAGO,

FOR THE

Fiscal Year Ending December 31,

1887.

CHICAGO: CAMERON, AMBERG & Co., PRINTERS. 1888.



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Cameron, Amberg & Co., Printers.
1888. ...



Department of Public Works,

CITY OF CHICAGO.

Compliments of

GEO. B. SWIFT,

COMMISSIONER OF PUBLIC WORKS.

ENGINEERING:	
CITY ENGINEER,	S. G. ARTINGSTALL
SEWERS:	
SUPERINTENDENT,	. О. Н. СН ЕХИ У
STREETS:	1
SUPERINTENDENT,	
SPECIAL ASSESSMENTS:	•••
SUPERINTENDENT,	. H. J. JONES
WATER RATE COLLECTION	S: The second
SUPERINTENDENT,	. THOS. N. BOND
MAPS:	
SUPERINTENDENT,	. F. V. BUSCHICK
ACCOUNTS:	
DEPARTMENT BOOK-KEEPER,	F. C. MEYER
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CHIEF CLERK WATER RATES,	. CHAS. CATLIN
WATER RATE ASSESSOR,	. T. PATTISON
WATER PERMIT CLERK,	. H. G. NAPER
Cashier Water Rates,	. R. N. PEARSON
REGISTRAR WATER RATES,	W. S. MAHER
METER RATE CLERK,	W. H. REED
IN CHARGE OF PRIVATE DRAINS,	B. F. DAVENPORT
ENGINEER IN CHARGE NORTH PUMPING WORKS,	. HENRY WELCH
Engineer in Charge West Pumping Works, .	H. MASON
ENGINEER SOUTH BRANCH RIVER PUMPING WORK	s, JOHN DENNIS
ENGINEER NORTH BRANCH RIVER PUMPING WORK	
SUPERINTENDENT WATER METERS,	. H. A. HAWKINS
BRIDGE REPAIRS,	. G. R. BRAMHALL
LAKE CRIB KEEPER,	C. KcKEE



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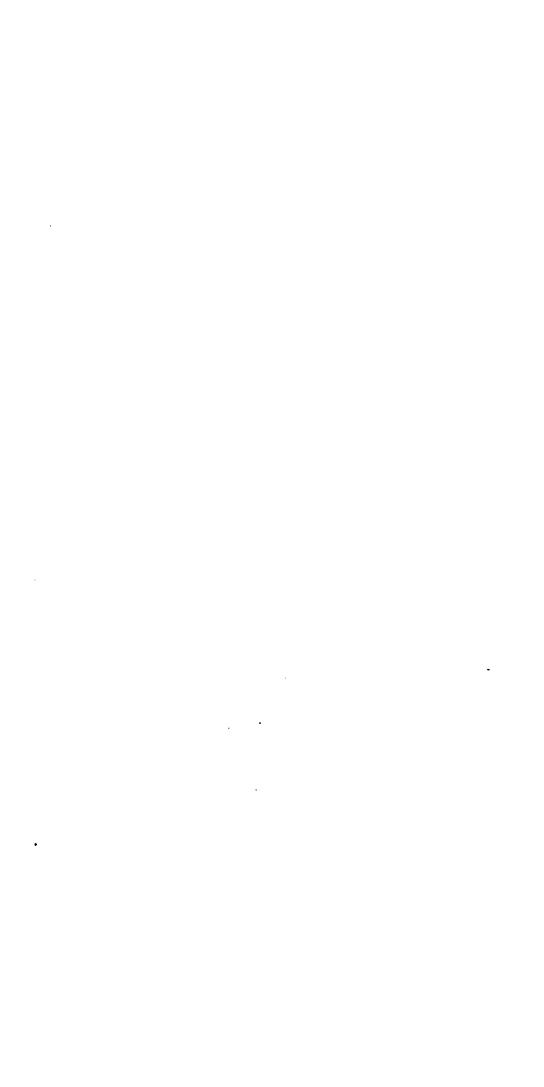
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DEPARTMENT OF PUBLIC WORKS.

ARTICLE I. The Commissioner of Public Works.

11. The Commissioner's Secretary.

III. The City Engineer.

IV. The Superintendent of Streets.

V. The Superintendent of Water.

VI. The Superintendent of Sewerage.

VII. The Superintendent of Special Assessments.

VIII. The Superintendent of Maps.

ARTICLE I.

THE COMMISSIONER OF PUBLIC WORKS.

- 551. There is hereby established an executive department of the municipal government of the city of Chicago, which shall be known as the department of public works, and shall embrace the commissioner of public works, a secretary to said commissioner, the city engineer, the superintendent of streets, the superintendent of water, the superintendent of sewerage, the superintendent of special assessments, the superintendent of maps, and such other assistants and employes as the city council may, by ordinance, prescribe and establish.
- 552. There is hereby created the office of commissioner of public works, who shall be the head of said department of public works, and shall hold his office for the term of two years, and until his successor shall be appointed and qualified. He shall have the management and control of all matters and things pertaining thereto; and the appointment and removal, with the consent of the mayor, of the subordinate officers named in the last preceding section; and said subordinate officers may, with the consent of the commissioner, appoint and remove all employes in their respective departments.

- 553. Said commissioner shall appoint all other employes in said department, and in addition to the number of clerks, assistants and employes regularly employed and provided for by ordinance, may appoint such other clerks, assistants and employes as he may deem necessary to properly perform the work in said department; and he may remove any such assistant, clerk or employe at his pleasure.
- 554. Said commissioner of public works shall be appointed by the mayor, by and with the advice and consent of the city council, on the first Monday in May, 1881, or as soon thereafter as may be, and biennially thereafter.
- 555. Said commissioner, before entering upon the duties of his office, shall execute a bond to the city of Chicago, in the sum of fifty thousand dollars, with such sureties as the city council shall approve, conditioned for the faithful performance of the duties of his office.
- 556. It shall be the duty of said commissioner to require good and sufficient bonds to be given by all subordinate officers and employes in said department of public works who shall receive or have the care, custody or handling of any moneys belonging to the city of Chicago; which said bonds shall be approved by the mayor.
- 557. Said commissioner shall have charge of all public improvements, commenced or to be commenced by said city, and of all special assessments; and shall have power, subject to the ordinances of the city, to regulate and control the manner of using the streets, alleys, highways and public places of the city, for the erection of telegraph poles or other poles and posts; for the laying down of gas, water or steam pipes and sewers authorized by law or the ordinances of the city, and to determine the location thereof; and to cause the prompt repair of the streets, alleys, highways and public places, whenever the same are taken

up or altered: Provided, however, that nothing herein contained shall be construed to repeal, or in any manner conflict with any provision of this ordinance creating the department of buildings: and provided, further, that the abatement and removal of all nuisances shall be in special charge of and under the control of the department of health.

- It shall be the duty of said commissioner of public works, subject to the provisions hereof and the ordinances of the city, to take special charge and superintendence of all streets, alleys, lanes and highways in the city of Chicago, and of all walks and cross-walks, bridges, viaducts, docks, wharves, public places, public landings, public grounds and parks in said city; of all markets, market places and market houses; of all engine houses, hospitals, armories, and all other public buildings in the city, belonging to the city, and of the erection of all public buildings; of all lamps and lights for the lighting of streets, alleys, lanes, highways, bridges, viaducts, parks, public places and public buildings of the city, and of the erection and repair of such lamps and lights; of all works for the widening, deepening or dredging of the Chicago river and its branches, and of the harbor of said city; of all sewers and works pertaining thereto; and of the water-works of said city; and he shall collect all water rents, water taxes or assessments, water licenses and permits, and all sewerage permits and licenses.
- 559. Said commissioner shall control and direct all expenditures to be made by the department of public works; shall sign and draw his requisition upon the comptroller for the payment of all bills and accounts therefor which in his judgment are correct, and which may be duly certified by the superintendent under whose supervision the expenditure was incurred.
- 560. No payment shall be made on any work or job doneby contract, for any extra work not specified in the contract, un-

less such extra work shall have been done by the written order of the commissioner of public works, to be annexed to such contract, directing the same, and stating that such work is not included in the contract: *Provided*, that any order given under this section shall state what the extras are, and that such extras are necessary for the proper completion of, or for the security of, the work previously done, and the reasons therefor.

- 561. All moneys payable by the corporation, for work done or supplies furnished by contract or otherwise, under the department of public works, shall be paid by the comptroller upon the requisition of the commissioner of public works.
- 562. All contracts for the making of any public improvement to be paid for in whole or in part by special assessment, and any work or other public improvement, when the expense thereof shall exceed the sum of five hundred dollars, shall be let to the lowest responsible bidder, after advertising the same, and shall be approved by the mayor; but any such contract may be entered into by the said commissioner without advertising for bids, and without such approval, by a vote of two-thirds of all the aldermen elected.
- by the city council, which is to be paid for by special assessment, and the assessment for the same shall have been finally confirmed, and one-half of the special assessment shall have been paid into the city treasury, the commissioner of public works shall advertise in some newspaper printed in the city of Chicago, of general circulation, for proposals for doing said work: Provided, however, a contract for said work may be made before one-half of the special assessment is collected, if authorized by a vote of two-thirds of all the aldermen elected: and provided, also, when a portion of the work on any public improvement is done by private contract, under the authority of the city council,

the remainder of the work upon such public improvement may be let at any time after the assessment thereof shall have been ordered by the city council. A plan or profile of the work to be done, accompanied with specifications for the doing of the same, shall be first placed on file in the office of said department, before any such advertisement shall be made, which said plan, profile and specification shall, at all times, be open for public inspection; such advertisement shall be published on five separate days, the first publication to be not less than ten days before the day fixed for opening said proposals, and shall state the work to be done.

564. In all cases, the bids for doing any work, or making any public improvement, shall be sealed bids, directed to said department, and shall be accompanied with a deposit, the amount of which shall be fixed by said commissioner, and named in said advertisement, and which shall not exceed five per cent, of the estimated cost of the improvement or work to be done, nor be less than the sum of one hundred dollars. Said deposit shall be in money, or a certified check upon some Chicago bank, in good standing, payable to the order of said commissioner, and shall be forfeited to the city in the event that the bidder shall neglect or refuse to enter into a contract (with approved sureties) to execute the work for the price mentioned in his bid, and according to the plans and specifications, in case the contract shall be awarded to him. Said bids shall be opened at the hour and place mentioned in said notice; and should said bid or bids be rejected, or should it become necessary, for any other reason, to readvertise for proposals to do said work, such subsequent advertisement may be, at the discretion of said commissioner, for three instead of five days, as required in the first instance. Said commissioner may, in said advertisement, reserve the right to reject any and all bids.

- 565. All contracts, exceeding in amount the sum of five hundred dollars, for work, materials, or supplies, relating to any of the matters under the cognizance of the department of public works, shall be let by the commissioner of public works to the lowest reliable and responsible bidder or bidders, whose bid does not exceed the estimate; and bonds to be approved by the commissioner, shall be taken for the faithful performance thereof; all such contracts shall be executed in triplicate by the commissioner of public works, on the part of the corporation, and by the contractor; one original copy so executed shall be kept and filed in the office of the commissioner of public works, one shall be filed in the office of the comptroller, and the third shall be given to the contractor. All contracts, and bonds so taken, shall be in the name of, and run to the city of Chicago; and every contract, for a sum greater than five hundred dollars, shall have the consent, in writing, of the mayor endorsed thereon, and shall be countersigned by the city comptroller.
- 566. No contract shall be made for any work or supplies relating to any of the matters within the cognizance of the department of public works, unless such work or supplies shall have been authorized by the city council, except that whenever any such work or supplies shall be necessary, and the total cost thereof shall not, in any one case, exceed five hundred dollars, the commissioner of public works may cause the same to be done or furnished, under the supervision of the appropriate officer of the department; but no such expenditure shall be made without the written order of the commissioner of public works, through his secretary, which order, when filled, shall be returned and filed as a voucher in said department, with the bill upon which payment was made.
- 567. In all cases, before such supplies, work, materials or necessaries of any kind shall be ordered or purchased by said department, exceeding in amount the sum of two hundred dol-

lars, and not more than five hundred dollars, said commissioner shall first obtain, in writing, at least three informal bids to furnish the same, which said bids shall accompany, and be filed in every case, with the voucher upon which the requisition for payment of the same is issued.

568. In all contracts executed by said commissioner, on behalf of the city, the right shall be reserved to said commissioner to finally decide all questions arising as to the proper performance of said work; and in case of improper construction, or of noncompliance with the contract in any manner, to suspend said work at any time, or to order the partial or entire reconstruction of said work if improperly done, or to declare the contract forfeited, and to re-let the same without further advertisement; and to adjust the difference—of damages or price (if any there be) which the contractor or contractors failing to properly construct such work in such cases of default, should pay to the city, according to the just and reasonable interpretation of said contract.

569. In cases where the contractor or contractors shall proceed to properly perform and complete their said contracts, the said commissioner may from time to time, as the work progresses, grant to said contractor or contractors an estimate of the amount already earned, reserving fifteen per cent. therefrom, which shall entitle the holder or holders to receive the amount that may be due thereon when the money applicable to the payment of such work shall have been collected, and the conditions annexed to said estimate, if any, shall have been satisfied.

570. All contracts entered into by the said commissioner of public works on account of the water or sewerage works of the city, shall specify that they are for such works.

- 571. All contracts in which the contractor or contractors agree to be paid from special assessments, shall contain covenants in substance to the effect that such contractor or contractors shall have no claim or lien upon the city in any event, except from the collection of the special assessments made for the work contracted for; and that no liability of any kind shall attach to the city by reason of the entering into such contract, except for the payment over to such contractor or contractors of moneys received by the city under special assessments levied or to be levied for the improvement specified in such contract, and no contract for work to be paid for by a special assessment shall be let except to a contractor or contractors who will so agree.
- 572. In case the prosecution of any public work shall be suspended in consequence of the default of any contractor or contractors, or in case the bids for doing such work shall be deemed excessive, or the person or persons making proposals are not, in the opinion of said commissioner, responsible or fit to be entrusted with its performance, the said commissioner of public works may, with the approval of the city council, where the urgency of the case and the interests of the city require, employ workmen to perform or complete any improvement ordered by the city council: *Provided*, that the cost and expense thereof shall in no case exceed the amount assessed or the sum appropriated for completing the same.
- 573. Whenever said commissioner or any other city officer shall let any work or improvement which shall require the digging up, use or occupancy of any street, alley, highway or public grounds of said city, there shall be inserted in the contract for the same, substantial covenants requiring such contractor, during the night time, to put up and maintain such barriers and lights as will effectually prevent the happening of any accident in consequence of such digging up, use or occupany of any street, alley, highway or public grounds, for which the city might be

liable, and also such other covenants and conditions as experience may prove necessary to save the city harmless from damages. And also to provide in such contract, that the party contracting with the city shall be liable for all damages occasioned by the digging up, use or occupancy of such street, alley, highway or public grounds, or which may result therefrom, or which may result from the carelessness of such contractor, his agents, employes or workmen.

574. Whenever any work or improvement is let by contract, to any person or persons, firm or corporation, the officers of the city letting the same shall, in all cases, take a bond from such person, persons, firm or corporation, with good and sufficient sureties, in such amount as shall not only be adequate to insure the performance of the work in the time and manner required in such contract, but also to save and indemnify and keep harmless the said city against all liabilities, judgments, costs and expenses which may in any wise accrue against said city in consequence of the granting of such contract, or which may in any wise result from the carelessness or neglect of such person, persons, firm or corporation, or his, their or its agents, employes or workmen, in any respect whatever; and conditioned also, that when any judgment is recovered against said city by reason of the carelessness or negligence of such person, persons, firm or corporation so contracting, or his, their or its employes or workmen, and when due notice has been given of the pendency of such suit, such judgment shall be conclusive against such person, persons, firm or corporation, and his, their or its sureties on such bond, not only as to the amount of damages, but as to their liability; and conditioned also for the payment of all claims and demands whatsoever which may accrue to each and every person who shall be employed by such contractor, or any assignee or sub-contractor of such contractor, in or about the performance of such contract.

- 575. It shall be the duty of the commissioner of public works, in letting any contract for any sewer, public improvement or other work, to insert in the contract therefor, a condition to the effect that it shall and may be lawful for said commissioner, whenever he shall have reason to believe that the contractor has neglected or failed to pay any sub-contractor, workman, or employe for work performed on or about any public improvement, sewer or other work contracted for, to order and direct that no further vouchers or estimates be issued, and no further payments be made upon such contract until such commissioner shall be satisfied that such sub-contractors, workmen and employes have been fully paid. Every such contract shall also provide, that a certain percentage (not less that fifteen per cent.) shall be reserved out of the moneys earned upon such contract, and that such percentage shall not be payable until such contractor shall satisfy such commissioner or officer letting such contract that all subcontractors, workmen and employes have been fully paid.
- 576. Whenever the commissioner shall notify the contractor by notice personally served, or by leaving a copy thereof at the contractor's last place of abode, that no further vouchers or estimates will be issued, or payments made on the contract until the sub-contractors, workmen and employes have been paid, and the contractor shall neglect or refuse, for the space of ten days after such notice shall have been served, to pay such sub-contractors, workmen or employes, it shall and may be lawful for the city to apply any money due, or that may become due under the contract, to the payment of such sub-contractors, workmen and employes without other or further notice to said contractor; but the failure of the city to retain and apply any of such moneys, or of the commissioner to order or direct that no vouchers or estimates shall issue, or further payments be made, shall not, nor shall the paying over of such reserved percentage, without such subcontractor, workman, or employe being first paid, in any way

affect the liability of the contractor or of his sureties to the city, or to any such sub-contractor, workman or employe upon any bond given in connection with such contract.

- 577. All sewers and drains in any of the streets, alleys, avenues, or public places in the city shall be under the charge of the department of public works, which shall keep the same in good order and condition, and clean and free from obstructions, and shall cause to be made such repairs thereof and of the receiving-basins, culverts, and openings connected therewith, as may from time to time become necessary.
- 578. The commissioner of public works shall prescribe the mode of piercing or opening any of the sewers or drains, and the form, size, and material of the connections made therewith, and shall have authority to grant permission to make lateral connections with said sewers.
- 579. No connection shall be made with any sewer or drain without the written permission of the commissioner of public works; nor shall any person drain from any point within the limits of the city of Chicago, into the Chicago river or any of its branches, or into any slip connecting therewith, or into any canal or canals constructed under the authority of said city, without first obtaining a permit for such drainage from said commissioner of public works; and said commissioner is hereby authorized to grant such permits, and to exact a license fee therefor, to be fixed by said commissioner, which said license fee shall be equal to an amount sufficient to defray the expense imposed upon the city, in consequence of granting such permission. And any person making any connection or opening into any sewer or drain, or draining from any point within the city limits into the Chicago river or its branches, or into any canal or canals as aforesaid, without such permission, or in a manner different from the mode prescribed by said commissioner, shall subject the person making

the same and the person directing it, respectively, to a penalty of fifty dollars, and twenty-five dollars for each and every day the same is continued.

- 580. The commissioner of public works may grant permission to persons to construct, at their own expense, sewers or drains, to lay pipes to connect with any sewers or drains built in any of the streets, alleys or avenues in the city, charging a license fee therefor, of five dollars in each case; but such permission shall not be granted except upon the agreement, in writing, of the persons applying therefor, that said work shall be performed by some person or persons duly licensed therefor, and that they shall comply with the ordinances in relation to excavating the streets; that they will indemnify the corporation for any damages or costs to which it may be put by reason of injuries resulting from neglect or carelessness in performing the work so permitted; and that no claim will be made by them or their successors in interest against the corporation, if the work so permitted to be taken up by the authority of the city council, or for exemption from an assessment lawfully imposed for constructing sewers or drains in the vicinity of their property; and upon the further condition that the city council may at any time revoke and annul such permission, and direct such sewers, drains, or pipes to be taken up or removed.
- 581. No permit shall be granted to any person or persons, corporation or corporations, to open a paved or improved street or alley, unless the party applying therefor shall have first deposited with said commissioner a sum of money sufficient to cover the expense of replacing the same in as good condition as before opening. Said opening shall in every case be replaced by the city, and the actual cost thereof shall be borne and paid by the person or persons, corporation or corporations, for whom such opening was made.

- 582. The commissioner of public works shall keep a record of all permits granted for connections with sewers or drains, in which he shall enter the names of all persons from whom he may receive money for such permits, with the amount received from each person, and the time when it was received.
- 583. When the expense of any work or public improvement shall exceed the sum of five hundred dollars, and the same is to be paid out of the general fund, or the water or sewerage fund of said city, the doing of said work shall be let by contract, in the same manner as is provided in cases where the expense of the same is to be paid for by special assessment.
- 584. In all cases, before the letting of any contract, where bonds are required to be taken by the commissioner of public works, the sureties therein shall deposit with said commissioner a statement, under oath, showing the real property owned by each surety, the location of the same, its value, and the amount of incumbrance or incumbrances, if any, thereon.
- 585. All moneys to be paid to any person or persons out of the water or sewerage funds, or any special assessment fund shall be certified by the commissioner of said department, or, in his absence from the city, or incapacity by sickness, to act, by the mayor of the city, to the city comptroller, and a warrant therefor shall be drawn, stating therein the particular fund to which the same is chargeable.
- 586. Neither the commissioner of said department, nor any superintendent, officer, clerk, or other person employed in said department, shall be interested, directly or indirectly, in any contract made or entered into by said department for any work or for any material to be furnished, and all contracts made by said department in which the said commissioner, or any officer or employe of said department, shall be so interested, shall, at the option of the city, be declared utterly void, and of no binding

effect whatever, and any officer of said department interested in any contract shall thereby forfeit his office, and be removed therefrom on proof of such delinquency, and it is hereby made the duty of said commissioner, and of the mayor, and of every city officer, to report to the city council any such delinquency when discovered.

- 587. No officer or employe of said department shall, either directly or indirectly, receive any interest or profit whatever, on account of the deposit of the city funds, nor shall any such officer or employe, either directly or indirectly, make use of or borrow any of said funds for his own private benefit or advantage.
- 588. Said commissioner shall, on or before the first day of May in each year, prepare and present to the city council a report showing the receipts and expenditures and entire work of his department during the previous fiscal year.
- 589. The commissioner of public works shall, within thirty days after the commencement of each fiscal year, submit to the comptroller, to be by him laid before the city council with his annual estimates, a statement, as near as the same can be estimated, of the repairs and improvements to be paid for out of the general fund of the city, and necessary to be undertaken by said city during the current year, and of the sums required by said department to make such repairs and improvements, as near as can be estimated; and also, a statement as to any desired improvements, with the probable expense thereof; and of all contracts made and unfinished; and the amount of any and all unexpended balances of appropriations of the preceding and prior years. Said report shall be in detail. The city council, having revised, changed or altered the estimates so submitted, may provide for raising the same, in the annual appropriation bill or ordinance.

- 590. It shall be the duty of said commissioner to cause to be kept books of account, in such manner as to show with entire accuracy, the receipts and expenditures of said department, and in such manner that the same may be readily understood and investigated; and also to preserve on file in said department duplicate vouchers of all the expenditures of said department, which books and vouchers and all papers and files of said department shall be at all times open to the examination of the comptroller, the finance committee, or any member of the city council.
- 591. The commissioner of public works shall in all matters whereby, by reason of any ordinance, resolution, agreement, or act, heretofore passed, entered into or done, the action of a board of public works is necessary, constitute a board of public works for such purpose, and shall do and perform all things required to be done by or imposed upon said board.
- 592. In all cases where provision is made by ordinance that the consent of the commissioner of public works shall be obtained to authorize any act to be done, he may grant a permit therefor, subject to the restrictions of the ordinances in relation thereto.
- 593. The commissioner of public works may direct the removal of any article or thing whatsoever, which may encumber or obstruct any street, avenue, or alley in the city of Chicago, under the penalties prescribed by law.
- 594. The commissioner of public works shall, when required by the city council, inquire into and report upon any of the matters within the cognizance of the department of public works, and shall, from time to time, communicate to the city council any information or suggestion which he may deem important in relation thereto.
- 595. All subordinate officers, assistants, clerks and employes employed in said department shall be subject to such rules and

regulations as shall be prescribed from time to time by said commissioner.

ARTICLE II.

THE COMMISSIONER'S SECRETARY.

- 596. There shall be in the office of the department of public works a person to be denominated secretary to the commissioner of public works, whose duty it shall be to preserve and keep all books and papers belonging to said department, or which are required by law to be filed therein.
- 597. He shall deliver to the city council and to the respective departments, all communications from the said commissioner in writing, and shall attend in the office of said department during the usual office hours, and do and perform such other services as may be required by said commissioner.

ARTICLE III.

THE CITY ENGINEER.

- 598. The city engineer shall perform such duties as may be required of him by the commissioner of public works, or the ordinances of the city.
- 599. He shall perform all such services in the prosecution of public improvements, as may require the skill and experience of a civil engineer.
- 600. He shall have charge of the construction and repairing of all bridges, viaducts and water works, and shall superintend the laying of all main and supply water pipes.

ARTICLE IV.

THE SUPERINTENDENT OF STREETS.

601. The superintendent of streets shall perform such duties as may be required of him by the commissioner of public works, or the ordinances of the city.

602. He shall have charge of the improvement, repair and cleaning of all streets, avenues, alleys and highways in the city of Chicago, and the construction and repair of all sidewalks.

ARTICLE V.

THE SUPERINTENDENT OF WATER.

- 603. The superintendent of water shall perform such duties as may be required of him by the commissioner of public works, or the ordinances of the city.
- 604. He shall have special charge of the assessment and collection of all water rates or assessments.
- 605. Said superintendent shall report to the city treasurer, once in each day, all moneys received by him in said department of public works, and at the same time pay over to the said city treasurer all such moneys, with a statement of the same: to what account the same belongs,—and shall take a receipt and duplicate receipt for all moneys so paid over, which said duplicate receipt he shall deposit forthwith with the said commissioner of public works.

ARTICLE VI.

THE SUPERINTENDENT OF SEWERAGE.

- 606. The superintendent of sewerage shall perform such duties as may be required of him by said commissioner of public works, or the ordinances of the city.
- 607. He shall have special charge of the construction of all public and private sewers and catch-basins, and the issuing of all permits and licenses in connection therewith.

ARTICLE VII.

THE SUPERINTENDENT OF SPECIAL ASSESSMENTS.

608. The superintendent of special assessments shall be ex officio examiner of subdivisions, and it shall be his duty to exam-

ine all plats and maps of subdivisions of land in the city of Chicago, upon presentation of the same to him, and if he shall approve of the same, he shall so certify. He shall also perform such duties as may be required of him by said commissioner of public works or the ordinances of the city.

609. He shall have special charge of all proceedings connected with the making of special assessments, subject to the directions of the corporation counsel.

ARTICLE VIII.

THE SUPERINTENDENT OF MAPS.

- 610. The superintendent of maps shall perform such duties as may be required of him by said commissioner of public works, or the ordinances of the city.
- 611. He shall have special charge of all matters pertaining to the keeping of the records of maps, plats, &c., recorded in the city of Chicago; and of all matters pertaining to street numbers; and he shall make all maps and drawings which may be required by said department.

REPORT

OF THE

COMMISSIONER OF PUBLIC WORKS

CITY OF CHICAGO.



COMMISSIONER'S REPORT.

Office of the Commissioner, City Hall.

To the Honorable, the Mayor and City Council of the City of Chicago.

Gentlemen:—I have the honor to submit herewith the Twelfth Annual Report of the Department of Public Works, for the year ending December 31, 1887. In consequence of the resignation of W. H. Purdy, Esq., the present incumbent was on the 12th day of April last, appointed and qualified as Commissioner of Public Works, assuming the duties of the office on that date. In presenting this report to your Honorable Body, I would respectfully refer you for more explicit information, to the statements in detail of the Superintendents of the various Bureaus, which mention the several classes and the work and improvements carried forward under the supervision of the Department, together with the cost. The rapid growth of the city in the outlying districts, making

it necessary to extend the water and sewerage system, with other essential public improvements, taxes the ability of the Department to meet such demands with the funds placed at its disposal, through the annual appropriation. By securing extensive competition in the purchase of material and in the letting of contracts, the Department has succeeded in accomplishing more than was anticipated in the early part of the season, and the result has been very gratifying.

An examination of this Report by your Honorable Body will, I think, prove satisfactory, and show an honorable and economical expenditure of the funds appropriated.

EXTENSION OF WATER SYSTEM.

42.21 miles of water pipe from 4 to 36 inches in diam-
eter, were laid during the year, making a total
of 638.23 miles at the close of the year.
304 new water valves were added: total in use 4,736
549 new fire hydrants were added: total in use 5,899
5 fire cisterns were added: total 46
8,807 new house service taps were added:
total in use
8,807 new house service pipes were added:
total in use
Number of service taps inserted in water
mains, including retaps 9,438

EXTENSION OF SEWERAGE SYSTEM.

17 miles of brick and pipe sewers, from 12 inches to
71/2 feet in diameter, were constructed during
the year, making a total in use of 4721/2 miles.
756 new catch-basins were added, making the
total number
605 man-hole chambers were added, making
the total number
Old catch-basins raised to grade 1,616
Old man-hole chambers raised to grade 1,519
Old catch-basins and man-holes repaired 308
Number of catch-basins cleaned 12,503
Sewers cleaned
House drains laid

STREET IMPROVEMENTS.

There were 681,265.36 square yards, or 36.75 miles of street pavement laid during the past year.

There were 216,199 square yards of street pavement repaired; 1.56 miles of street planked.

There were 91,571 square yards of pavement laid by Street Railway Companies in streets occupied by their tracks.

Total number of miles of paved streets.	306.85	miles.
New sidewalks constructed	42.50	- 11
Sidewalks reconstructed	197.15	24

Sidewalks repaired 36.29 miles.
Total sidewalks in city
Streets cleaned3,513.92 "
Number of aprons, culverts, crossings, etc.,
built
Street lamps erected (gas) 1,542
Street lamps erected (oil)
Total number of street lamps in the city21,546
Street lamps repaired
Number of buildings removed 935
MAPS AND PLATS MADE.
For new subdivisions
For opening, widening and vacating streets and
alleys
For special assessments, street and law depart-
ments 2,724
For miscellaneous purposes
Total
TOTAL ASSESSMENTS PREPARED.
For improvement of streets and alleys 229
For private drains
For water service pipes
For street and alley openings 6

COMMISSIONER'S REPORT.	99
For new sidewalks	214
For gas lamps	117
For oil lamps	47
Total	866

MISCELLANEOUS.

SPECIAL IMPROVEMENTS.

Dredging the Chicago River and its branches.

Constructing Indiana Street Viaduct.

Building engine-house for fire-boat at the foot of La Salle street.

Constructing swing bridge over Chicago River at Eighteenth street.

Constructing swing bridge over Chicago River at Jackson street.

Building engine-house for Fire Department on Oakley avenue, northeast corner Thirteenth street.

Building shop and patrol barn for Police Department on Union street, corner Eagle street.

Constructing swing bridge over Chicago River at Dearborn street.

Constructing swing bridge over Chicago River at State street.

Building fire engine house at Nos. 77 and 79 Illinois street.

Constructing viaduct over railroad tracks on Jackson street, at the river.

Machinery for operating Jackson street, Madison street and Randolph street bridges.

New lake-water tunnel for new Pumping Works.

Constructing a breakwater around Lake Tunnel Crib.

Police station building, Nos. 958 and 960 North Halsted street.

Constructing new bridge over the river at Wells street.

Constructing viaduct on Eighteenth street and the river.

CONTRACTS.

The contracts entered into by the city for various kinds of material and the construction and completion of public improvements carried on under the direction of the Commissioner of Public Works, shows an expenditure of \$3,741,900.94, as follows:

147	street and alley improvements, ag-		
	gregating	1,071,776	97
19	for curbing, filling and grading		
	streets, aggregating	41,578	60
101	for water service pipes, aggregating	65,442	71
95	for private house drains, aggregat'g	31,284	38

Total.....\$3,741,900 94

COMMISSIONER'S REPORT.

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FINANCIAL.

Statement showing the amount appropriated by the City Council, and amounts from other sources to be expended for public improvements under the supervision of this Department, for the year 1887:

Balance January 1st, 1887, to credit of	f	
water, sewerage and general appro-		
priation and City Hall funds	\$1,530,735	75
From general appropriation for 1887	1,544,871	71
From rent and interest	26,335	08
From street lamp and other funds	107,139	92
From private parties, money advanced.	40,709	00
From water revenue, including tapping		
permits	1,526,265	63
From drain permits and drain layers		
licenses	36,222	40
From railroad companies on account of		
viaducts and bridges	31,835	55
From private parties for labor and ma-		
terial	120,917	07
From house moving permits	3,183	00
From vouchers deposited back, and mis-		
cellaneous items	3,085	26
From special assessments	3,160,474	67
Total	\$8,131,775	04

Of this amount there has been expended as follows:

From general appropriation, sewerage and City Hall Funds in 1887. For bridges and viaducts, dredging, street
cleaning, public buildings, tunnels,
Canal pumping works, Fullerton ave-
nue pumping works, parks, work for
private parties, salaries, City Hall,
constructing and maintaining sewers
and catch-basins\$1,718,730 86
For water supply, pipe
extension \$343,550 12
For private work by
meter department 58,598 76
For extension of North
Pumping Works 37,788 17
For water and drainage
commission 22,701 45
For new shore inlet 18,373 02
For maintenance of
water system, opera-
ting pumping works,
cost of collecting
taxes and miscella-
neous items 657,447 85
For interest on water
loan bonds 264,374 50

For real estate	\$ 57,220	31	
For investment in city			
bonds	34 3,280	00	
For street improve-			
ments, street open-			
ings, sidewalks, pri-			
vate drains, water			
service pipes and			
lamp posts	1,358,889	47	
For rebate (excess of			
assessments over cost			
of improvements),			
abatements to prop-			
erty owners doing			
their own work, land			
damages and assess-			
ments held over and			
annulled by Council.	1,801,585	20 \$4,963,808	85

BALANCE.

December 31, 1887, to	
credit of water, sew-	
erage. City Hall and	
general appropria-	
tion funds	1,449,235 33
Total	\$ 8,131,775 04

WATER WORKS.

Much time and careful attention have been given to a study of the management and control of the water works system of the city. Soon after entering upon his duties it became evident to the Commissioner that strict business principles had not prevailed in the management of the several branches of this Department. Insubordination and inefficiency predominated, especially at the North Side Pumping Works, and there seemed to be no attempt toward an economical administration of affairs. Purchases had been and were being made in open market without regard to competition in prices, and if any rules or regulations regarding the subject of supplies had ever been adopted, their observance had been and was being ignored. The books at the works could not be made intelligible at the hands of an expert and the task had to be abandoned as hopeless. To bring order out of the chaos it became necessary to discharge some of the men, and among the number were several of the oldest attaches of the service. But they had grown lax and careless and were wedded to neglectful habits which could not be tolerated, as the public interest was suffering at their hands. Their places were filled with new and efficient men, and a new order of things was instituted, business methods were adopted and a strict adherence thereto was enjoined upon all. The result has proved very beneficial to the city, as can be seen in the bearing of the employes, the condition of the accounts and the harmony which everywhere prevails.

Later in the year I became satisfied that mismanagement prevailed in the mechanical department of the water supply system. Bills for repairs were frequent and of such magnitude as to warrant an investigation, for which purpose the services of qualified men were secured. Their report was of a nature that I deemed it advisable to submit the same to his Honor, the Mayor, who regarded it of such importance as to require his immediate action. The result was the employment of a mechanical engineer of known ability, in the person of F. W. Gerecke, who was given instructions to make a thorough examination of the various pumping works of the city, his attention being first directed to the condition of the North Side Works. His report revealed a startling state of affairs. The details will be found on page 192 of this report. The West Side Works are undergoing a similar examination.

Radical changes have also been made in the Water Collection Department, economical methods adopted, and the result is a large increase in the collections over those of the preceding year, at a decreased expense. For details see the report of Superintendent T. N. Bond, page 227.

During the year the supply of water has been of good quality, but deficient in quantity. The latter difficulty will be remedied for the time being, however, as soon as the North Side pumps can be put in proper shape; but then the city will be confronted by the fact that the capacity of the present tunnels has been about reached.

Appreciating this last named condition, the Department has during the year extended a new tunnel 1500 feet into the lake, to take the place of the old shore inlet. From this point, in case of emergency, an ample supply of water can be had, but it will not be used, except in extreme cases. In other words, it was built as a precautionary measure, and to put the city in position to meet a contingency. Before another report is submitted, however, a new water tunnel, which has been talked about for so many years, will be far advanced in construction, starting from the vicinity of Twelfth street and extending four miles east, the west or shore end connecting, at a point near Harrison street, with the old cross-town tunnel which supplies the West Side Pumping Works. It is also expected that during this year a protection will be built around the "Crib," which will remove the danger from ice and exposure.

NORTH PUMPING WORKS.

(FOUR DOUBLE AND TWO SINGLE ENGINES.)

An investigation of the condition of the North Pumping Works has developed a total inability of the engines to perform the service equal to their required capacity, and that at no time for several years past have they furnished the city the quantity of water accredited to them, while the cost and expense of maintaining and operating the same has been nearly equal to the amount required had the engines and pumps performed their full duty. The cost of pumping and other expenses at these works, including coal and stores on hand, general repairs, etc., for the past year, was \$135,726.88.

WEST PUMPING WORKS.

(FOUR ENGINES.)

The quantity of water pumped during the year was 20,045,528,600 gallons, being an average of about 54,919,256 gallons per day under a head of 97.3 feet.

Expenses due to pumping are.....\$90,849 78

Other expenses at these works..... 1,997 65

Total expenditure......\$92,847 43

PIPE SYSTEM.

Water pipes were laid during the year as follows:

Four (4) inch	353 feet.
Six (6)129,6	373 "
Eight (8) 59,8	383 "
Twelve (12) 15,	553 "
Sixteen (16)	956 "
Twenty-four (24) 2,6	690 "
Thirty-six (36)	106 "
Total234,0	014 feet.

The whole being equal to 44.32 miles. Small pipe taken up and abandoned 2.01 miles; net pipe added to the system during the year, 42.21 miles—a total of 638.23 miles of pipe laid in the city at the close of the year.

Fire hydrants placed in position during the year	577
Hydrants taken out and replaced by others of	
different sizes	28
Net number of hydrants added to the system	549
Total number of fire hydrants now in use	5,899
Stop-valves put in place during the year	317
Stop-valves taken out and replaced by others	
of different sizes	13
Net number of stop-valves added to the system.	304
Total number now in use	4,736

WATER METERS AND ENGINES.

Number of meters put in during the year	249
Number of meters removed during the year	61
Net increase	188
Total number of meters now in use	3,273
Number of elevators and other water engines	
supplied during the year	3
Total number of water engines now in use	381

The revenue derived from water measured by these meters and engines for the past year amounts to \$499,233.95, an increase of \$23,452.91 over the amount collected from the same source last year.

WATER WORKS RECEIPTS AND EXPEND-ITURES FOR 1887.

RECEIPTS.

Water rates collected (including delin-		
quent)\$1,	490,023	68
Water service cocks (permits and plum-		
bers' licenses)	36,241	95
Water meters, labor, etc., for private		
parties	48,060	53
Rent of Rookery lot	20,416	68
Advances to lay water pipe	34,752	00

Interest from investment	\$5,918	40
Miscellaneous	8,126	91
Total\$1	,643,540	15
		-
EXPENDITURES.		
For salaries and other expenses, water		
collection office\$	122,591	01
For other salaries and office expenses		
paid from water fund	5,781	42
For service cocks	34,293	58
" meters, fitting and private work	58,598	76
" interest on water loan bonds	264,374	50
" brick and material on hand	116,252	77
" Water Works repairs	107,195	30
" North Pumping Works	135,726	88
" investment in city bonds	343,280	00
" New Lake Tunnel	4,718	66
" North Pumping Works extension	37,788	17
" West Pumping Works	90,995	72
" New Shore Inlet	18,373	02
" Water and Drainage Commission	22,701	45
" Lake Tunnel Crib	6,487	68
" real estate	57,220	31

COMMISSIONER'S REPORT.

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For advances for laying water pipe, re-	
funded	6
" water rates refunded	9
" water pipe extension 343,550 1	2
" miscellaneous 12,952 58	8
Total\$1,803,334 18	8
	=
Total cost of Water Works of the city to December 31, 1887, is as follows: Cost up to May 6, 1861, when the works were transferred from the Board of Water Commissioners to the Board of Public Works\$1,020,160 23	
EXPENDITURES SINCE 1861.	
Cost of water pipe laid \$6,842,018 43	1
" North Pumping Works 918,046 14	4
" West Pumping Works 894,565 78	5
" First Lake Tunnel 464,866 08	5
" Second Lake Tunnel 415,709 30	6
" New Lake Tunnel 4,718 60	6
" Land Tunnel 542,912 63	3
" Lake Crib for Water Tunnel. 70,319 10	0
" Lake Shore aqueduct 42,871 1	7

Water Works shops.....

25,551 73

COMMISSIONER'S REPORT.		49
Cost of Water Works stock	\$29,318	00
" Water Reservoir fence	1,702	87
" addition to stables	1,019	48
" New Shore Inlet (not com-		
pleted)	61,780	68
Cost on account of New Pumping		
Works	57,170	64
Cost on account of New Lake Tunnel	690	86
Total cost of the entire Water Works		
to December 31, 1887 \$1	-1000,	
Paid for as follows:		
Paid for as follows: From general taxes\$2,713,878 53		
From general taxes\$2,713,878 53		
From general taxes\$2,713,878 53 From water loan bonds,		
From general taxes\$2,713,878 53 From water loan bonds, 6 per cent		
From general taxes\$2,713,878 53 From water loan bonds, 6 per cent		
From general taxes\$2,713,878 53 From water loan bonds, 6 per cent		
From general taxes\$2,713,878 53 From water loan bonds, 6 per cent		
From general taxes\$2,713,878 53 From water loan bonds, 6 per cent		

Total revenue from water rents to	
December 31, 1887	\$19,762,774 62
Total operating expenses and mainte-	
nance to December 31, 1887, in-	
cluding interest, \$6,198,884.42, on	
bonded debt and bonds canceled	14,074,099 84
Total surplus revenue over total ex-	
penditure	\$5,688,674 78
P	
Accounted for as follows:	
Cash balance in treas-	
ury Dec. 31, 1887\$1,080,151 63	
Paid toward Water	
Works construction. 3,865,543 21	
Suspended accounts	
(D. A. Gage, Treas.,	
and Duncan Shuman	
& Co., N. Y.) 180,292 72	
American Exchange	
Nat. Bank, N. Y 119,419 86	
F. C. Meyer, book-	
keeper (discharged	
men's fund) 300 00	
R. N. Pearson, cashier,	
(petty cash) 691 88	
Meter Dept., stock on	
hand 16,572 11	

Tapping Dept., stock on hand Shop and stable stock	\$ 5,701	24		
on hand	5,634	77		
Invested in city bonds.	343,280	00		
Water pipe, etc., on				
hand	112,372	96	\$ 5,729,960	38
Less amount due de- positors for hydrant wrenches	910	00		
Less amount advanced				
by private parties to				
lay water pipe in non-				
paying districts	40,375	60	41,285	60
			\$ 5,688,674	7 8

BONDED DEBT OF WATER WORKS.

Water loan bonds outstanding December 31, 1887, bearing 7 per cent. interest and maturing as follows:

July 1,	1888	\$150,00 0	00
July 1,	1889	225,000	0 0
July 1,	1890	268,000	00

July 1.	1892	\$ 821,000	00		
	1894	541,000			
July 1,	1895	1,485,000	00		
			_	\$3,490,000 0	0

Bearing 6 per cent., maturing as follows:

July 1, 1897	\$50,000	00		
July 1, 1898	82,000	00		
		_	\$132,000	00

Bearing 3 65 per cent., maturing as follows:

July 1,	, 1902	*	333,000	00
	Grand total outstanding	\$3	3,955,000	00

Net cash balance to credit of water fund, December 31, 1887 \$1,080,151 63

Total interest paid on water loan to

January 1, 1888 6,198,884 42

The following table shows the estimated quantity of water furnished the city, and the revenue per million gallons received annually from 1858 to 1886, inclusive. For the year 1887, the revenue per million gallons, can not be given in consequence of the discrepancy discovered in the pumpage at the North Works, as described in the Engineer's report:

YEAR.	MILLION GALLONS FURNISHED.	REVENUE.	REVENUE PER MILLION GALLONS.
1858	1,092	\$ 102,178.85	\$ 93.57
1859	1,415	122,753.50	86.70
1860	1,717	131,162.73	76.39
1861	1,766	131,035.10	74.15
1862 (15 months)	2,705	188,448.25	85.00
1863	2,336	192,246.39	82.29
1864	2,523	224,902.57	89.14
1865	2,778	253,114.49	91.11
1866	3,169	302,017.59	95.30
1867	4,232	338,929.28	80.08
1868	5,375	420,686.94	78.26
1869	6,801	476,968.24	70.13
1870	7,945	539,180.19	67.86
1871	8,423	445,834.64	52.93
1872	10,051	544,465.90	54.17
1873	11,723	708,804.32	60.46
1874	13,903	705,926.64	50.77
1875 (9 months)	10,957	635,996.54	58.04
1876	15,346	771,940.38	50.30
1877	19,047	908,509.64	47.70
1878	19,564	944,190.97	48.31
1879	20,557	922,001.26	44.85
1880	21,002	865,618.35	41.21
1881	23,331	936,922.07	40.16
1882	24,150	1,049,576.90	43.46
1883	26,742	1,142,868.54	42.73
1884	29,286	1,204,338.74	41.12
1885	33,451	1,339,038.00	40.03
1886	35,693	1,374,837.32	38.52
1887		. 1,490,023.68	

Under the various ordinances and orders of the City Council, amounts have been rebated on water rates during the past year as follows:

On educational, religious and charitable		
institutions, under ordinance of No-		
vember 21, 1884	\$12,678	65
Municipal and Board of Education, under		
ordinance of July 30, 1885	16,016	11
On private residences by various orders		
passed by the City Council	248	00
. Total amount rebated	\$28,942	76

SEWERS.

The sewerage system has been extended in the various divisions of the city during the past year as follows:

Constructed in the West Division12.400 miles
Constructed in the South Division 4.200 "
Constructed in the North Division 0.552 "
Total
Number of catch-basins built
Number of sewer man-hole chambers built 605

The cost of constructing sewers and catch-basins during the year was as follows:

West Division	\$128,632	62
South Division	48,641	35
North Division	7,303	07
Total	\$184,577	04
Total number of miles of sewers in the		
city December 31, 1887	472	.48
Total number of catch-basins	15,5	234
Total number of man-hole chambers	16,9	903

MAINTENANCE.

The total cost of cleaning and repairing the sewers, the cost per mile, and number of miles; also the number of catch-basins and man-hole chambers distributed in the three divisions of the city, is as follows:

DIVISIONS.	MILES OF SEWERS.	NUMBER OF CATCH-BASINS.	MAN-HOLE CHAMBERS.
West	263.47	8,330	9,371
South	129.63	4,301	4,669
North	79.38	2,603	2,863
Totals	472.48	15,234	16,903

There was expended for repairs during the year \$11,810.54, being an average cost of \$24.99 per mile.

There was expended for cleaning, \$50,264.00, making the average cost \$106.39 per mile.

The total cost of both repairs and cleaning was \$62,075.19, an average cost of \$131.38 per mile.

Of the 472.48 miles of sewers constructed, 239.787 miles are of brick and 232.693 miles of vitrified pipe.

TOTAL COST OF SEWERS, ETC.

DIVISIONS.	MILES.	COST.	COST PER MILE.
West	263.47	\$3,848,472.69	\$10,811.37
South	129.63	1,868,067.97	14,410.76
North	79.38	1,229,383.79	15,487.32
Totals	472.48	\$6,945,924.45	\$14,700.99

BONDED SEWER DEBT.

Sewer Bonds outstanding December	er 31, 1887,
bearing 7 per cent. interest and maturin	g as follows:
July 1, 1888	\$343,000 00
July 1, 1889	44,000 00
July 1, 1892	490,000 00

COMMISSIONER'S REPORT.	57
July 1, 1894 \$785,000	00
July 1, 1895	00
July 1, 1890, bearing 41/2 per cent. in-	
terest	00
July 1, 1904, bearing 4 per cent. interest 458,000	00
Total\$2,622,500	00
RIVER IMPROVEMENT BONDS.	
Bonds outstanding December 31st, 1887, bear 7 per cent. interest and maturing as follows:	ing
July 1st, 1890 \$ 250,000 00	
. " 1892 249,000 00	
" " 1893 500,000 00	
" " 1894 346,000 00	
" " 1895 1,263,000 00 ———— \$2,608,000	00
Grand total outstanding \$5,230,500	=
Total interest paid on sewerage bonds	
to January 1st, 1888 \$4,579,468	50
Total amount paid as interest on river	
improvement bonds to January	
1st, 1888 \$3,579,620	00
The whole amount paid as interest on	
water, sewerage and river im-	
provement bonds, combined \$14,357,972	92

THE RIVER.

The river has not received the attention its importance to commerce would seem to demand, for the reason that the appropriation was entirely inadequate to justify any extended work in the way of dredging. Statistics show that during the year more than 24,000 vessels, with a tonnage of over 800,000,000 tons, arrived and departed, and I have no doubt that the aggregate would have been larger but for the fact that the river has been at times unnavigable in certain places. The vessel Interest has complained from time to time, and by petition to your Honorable Body has shown what the absolute condition is. So it is unnecessary to go into details.

In my opinion, the river is second only to the railroads in the business development of the city, and
until something is done to build and maintain an outer
harbor, its care should be provided for, from year to
year, by liberal appropriations. It should be kept
navigable to the largest vessels all the time. With
the sewers and more or less of the malarial accumulation of filth and debris incident to a great commercial
center emptying into it, this can only be done by persistent dredging. No pains have been spared to
prevent foreign matter finding its way into the river,
both in the interest of protecting the city's water
supply and saving the river from filling, but its con-

dition has been such, notwithstanding, as to justify the complaints of vessel owners and persons having lake-traffic interests. I cannot, therefore, too strongly urge that every attention be given to the subject, that the city may not only retain the commerce it has, but invite that which it has not.

RIVER LIGHTING.

With the view of furnishing sufficient light to make safe the transfer of shipping at night, and also providing greater light power at bridge approaches, viaducts and street ends-the most dangerous portions of our public thoroughfares—an agreement was entered into with the Western Electric Company, of this city, to provide and construct a plant of 100 arc lights of 2,000 candle power capacity, complete, in working order, for the sum of \$29,295; the plant to be located in the basement of the quarters of Chemical Engine Company No. 1, at the corner of Clinton and Washington streets; the lights to be distributed on the various bridges, viaducts and street ends, extending to Taylor street on the south, Kinzie street on the north and Rush street on the east. In accordance with this agreement the work was commenced and, on December 24th, 1887, the plant was started with 18 lights. . As far as weather and circumstances would permit, the work has been pushed, and in a short time will be

completed. At present there are about 80 lamps in position and all expectations have been realized. The river, bridges, viaducts and street ends are brilliantly lighted, thereby obviating danger at bridges and fully permitting navigation at night. I would recommend its further extension on the river and to the principal business streets.

BRIDGES AND VIADUCTS.

The cost of maintaining these structures for the year was as follows:

For	general repairs of bridges and via-		
	ducts	\$81,460	32
Of	this amount there was received for		
	labor and material, and from vessels		
	for damage to bridges	9,206	26
Tot	al cost to city for repairs of bridges		
	and viaducts	\$72,254	06

During the year a new bridge-was built at State street. It is first-class, so far as material and construction are concerned, but it would have been much better to have had a double roadway. The bridge was built, however, to meet an emergency, and the understanding is that at some future time it will be transferred to another point, and a double bridge put in its place.

New bridges of modern design are in process of construction at Wells street, Jackson street and Eighteenth street, and steam power is being applied to Randolph street and Madison street bridges.

Plans for the construction of viaducts over the tracks of various railroads entering the city are in preparation, and it is probable that at least ten or a dozen of these much-needed structures will be completed by the close of the year, at the expense of the railroad companies.

The telephone system at the bridges has proven a success, and is so admitted, even by those who inveighed most against it when adopted.

Under instructions from the Department, all the bridges and viaducts have been specially examined by the engineering bureau, and the result has demonstrated the necessity for the immediate repair of many that had not received proper attention. Some of them are classed in the report of the engineer under the head of "dangerous."

NORTH BRANCH RIVER PUMPING WORKS.

The past year 6,518,352,650 cubic feet of water were forced from the lake into the river at the Fullerton avenue works, at a cost for operating and maintenance of \$15,290.66. No water was pumped from the river into the lake during that period.

SOUTH BRANCH RIVER PUMPING WORKS.

These works performed their duty in a satisfactory manner, continuously, through the year, excepting when the river was swollen by freshets. The total cost of operating them was \$43,698.92.

OGDEN DAM.

This improvement has not required any extensive repairs since the general reconstruction and extension in 1886. There was expended for maintenance during the past year only \$229.25.

TRAFFIC TUNNELS.

There was expended for maintenance and repairs on these tunnels, the past year:

For the Washington street tunnel	\$2,473.51
For the La Salle street tunnel	1,875.87

The condition of the Washington street tunnel remains essentially the same as last year. The sum expended was for improving the roadway, and for temporary repairs, which were necessary to place the passage-ways in passable condition. No extended permanent repairs will be undertaken, pending acceptance or the taking possession of the tunnel by

the Chicago Passenger Railway Co., under the ordinance passed February 8, 1886. Occupancy by it, will require extensive changes and partial reconstruction to place the tunnel in condition to accommodate street-car traffic.

The amount expended on the La Salle street tunnel includes only the cost of maintenance and repairs for the portion of the year ending September 10, 1887, at which date the North Chicago Street Railroad Co. took formal possession of it, and commenced the necessary repairs and the laying of the cable tracks, under the conditions of the ordinance of July 19, 1886, which releases the city from further expense connected with the improvement or maintenance of this tunnel.

STREETS.

The year was one of great activity in the Street Department, as will be seen by reference to the work done. The fact that the former administration, in its anxiety to make elaborate exhibits, had left the city a debt of over a quarter of a million dollars for paving street intersections, was an early embarrassment, for, in providing for this, the Council was limited in its appropriations. But the best possible use was made of the money at the Department's command. Contracts were let at favorable prices—the result of insisting upon wide competition—and the character of

the improvements will more than favorably compare with those of former years. The tendency is toward the greater use of the more permanent material. This should be encouraged, so that in a few years all the great thoroughfares of the city will be paved with granite, or some other substance more durable than the old-time wooden block. Special reference to the use of more permanent material is prompted by the belief that it is destined to be much cheaper than it has been.

The great objection to stone pavement has been the cost. My experience as to this, may not be uninteresting, since it sustained the objection. When I took charge of the Department, the bids were limited to four qualities of granite, from which selections were made, and these four were controlled by two parties. Believing this caused combinations, and, consequently, high prices, I had a large number of samples of granite offered as paving material, critically examined, and the result was the placing on the list of those which proved acceptable—eleven, instead of four, and prices fell twenty per cent.

It was natural to expect, with the growth and development of the city, more or less complaint about the tearing up of streets, but I think your Honorable Body, and the public at large, will recognize the fact that this inconvenience has been kept at a very low minimum, as compared with preceding years. I have given this matter personal attention, and made every

effort to lessen complaints. When permits have been issued (and this is a matter largely controlled by ordinances, and in which the Department has no discretion) for tearing up the streets, every reasonable condition has been imposed in the interest of the public. The former custom of giving permits, allowing half a dozen streets to be torn up at the same time, and in a half dozen different places, has been abandoned, and the various gas, telephone, electric light and other companies have been compelled to open only one block at a time. All such work is done at night, so far as possible, and the result has been quite satisfactory. In other words, the attempt of this Department to preserve the streets without placing an embargo on individual or corporate enterprise, has been successful.

During the year streets were improved as follows: Paved with cedar blocks..... 31.13 miles. sheet asphalt 0.22 1.91 asphalt blocks..... 0.25 granite blocks 2.85 cinders..... 0.44 iron 0.05 Total number of miles improved... 36.85 miles. In addition to the above, streets were planked for a distance of 1.56 Making a total of 38.41

Relaid	Miles of Pavement in 1887,	3.83	7.61
TOTAL MILES OF PAVEMENT LAID IN THE CITY.	Total Pavement in the City.	162.91 90 46 53.48	306.85
	Mew Pavement added in 1887.	17.53 8.52 3.09	29.14
TOTAL M	Amount Previously Laid.	145.38 81.94 50.39	17.772
Mile.	Average Cost per	\$28,043.00 36,590.00 23,739.47	\$30,330.00
TOTAL COST.	Grand Total	\$544,315.42 451,882.66 118,449.97	\$42,871.08 \$1,114,648.05
	Cost of Superin- tendence, Assessment, etc.	\$20,335.21 17,380.10 4,555.77	\$42,871.08
	Amount of Con- tracts.	\$523,380.21 434,502.58 113,894.20	11.071,776.97
LAID	.lesoT	19.41 12.35 4.99	36.75
PAVEMEN IN 1887.	Amount of Private Contracts.	. 12 . 15	45
MILES OF PAVEMENT LAID IN 1887.	Amount under JasmesserA	19.35 12.14 4.84	36.33
Square Yards. Square Yards.		100,493.18 65,220.52 25,318.05	191,081.75
		374,407.25 212,399.66 94,458.45	681,965.36
		West	Total

KIND OF PAVEMENT IN USE IN EACH DIVISION, DEC. 31, 1887.

DIVISIONS.	Wood Block.	Macadam.	Stone.	Block Asphalt.	Sheet Asphalt.	Graveling.	Cinders.	Iron.	Total Miles.
West	130.76	19.78	.39		.82	2.64	8.29		162.91
South	58.22	9.15	13.86	4.11	.33	4.38	.36	.05	90.46
North	47.89	1.19	.53		2.19	.42	1.26		53.48
Total Miles	236.87	30.12	15.01	4.11	3.34	7.44	9.91	.05	306.85

(Repaving Deducted.)

The foregoing tables include 7.61 miles of streets repaved during the year, which, deducted from the 314.46 miles down, leaves a total of 306.85 miles of paved streets in the city.

Repaying and repairs have been made on improved streets in each division of the city, as follows:

South Division	19,546	square	yards.
West Division	28,505	**	
North Division	10,048		
Total	58,099	square	yards.
Amount of repairs by corporations	158 100		
Total in city	216,199	square	yards.

STREET RAILWAYS.

During the year the Street Railway Companies paved the portion of the various streets occupied by their tracks, as shown in the following table:

CORPORATIONS.	Boulder Stone, Square Yds.	Granite Blocks, Square Yds.	Wooden Blocks, Square Yds.	Total Square Yards.
Chicago City Railway Co.		26,650		26,650
North Chicago St. R.R.Co.	35,704	9,216		44,920
Chicago Passenger Ry.Co.	15,401	1,281	3,319	20,001
Totals	51,105	27,147	3,319	91,571

The miles of streets occupied and operated by the several railroad companies are:

North Chicago Street R. R. Co26.05	miles
Chicago City Railway Co30.80	**
West Chicago Street Railroad Co46.94	-
Chicago Passenger Railway Co 9.33	11
Total	miles

SIDEWALKS.

The following table shows the various kinds of material used in the construction and repair of sidewalks:

	7	MATERIAL	4.	Total	Sidewalks	Total	
DIVISION.	Wood.	Wood. Stone.		Miles.	Repaired.	Work.	
South	13.67	6.77	1.16	21.60	7.57	29.17	
West	93.64	1.77	0.50	95.91	13.51	109.45	
North	7.89	1.29	0.45	9.64	15.21	24.85	
	115.20	9.83	2.11	127.15	36.29	163.44	

There were constructed 42.50 miles of sidewalks upon streets where walks had never been previously laid. About 10.25 miles of the same, varying in width from 4 to 6 feet, were built by the Department, and the remainder by contractors under special agreements with property owners.

The total number of miles of sidewalk laid in the city, including those constructed on highways controlled by the Park Commissioners, is as follows:

	N	Total		
	Wood.	Stone.	Concrete.	Miles.
City	895.09	86.61	15.68	997.38
Boulevards to West Parks		8.53		8.53
Boulevards to South Parks.		9.79		9.79
Boulevards to Lincoln Park		1.25		1.25
Total miles	895.09	106.18	15.68	1,016.95

STREET CLEANING.

The past year, 3,513.92 miles of improved streets were swept and cleaned, under a contract between the city and Jno. S. Cooper, for the sum of \$23.99 per mile, the total cost being \$84,298.88. The work was commenced on the 9th day of April, and discontinued on the 30th day of November, 1887.

STREET LAMPS.

	G	AS LAMI	PS.	OIL LAMPS.					
DIVISIONS.	Number in use in 1886.	Number added in 1887.	Total Number of Lamps.	Number in use in 1886.	Number added in 1887.	Total Number of Lamps.	Less Number Replaced by Gas Lamps.	Total.	
West	9,005	997	10,002	2,145	367	2,512	311	2,201	
South	4,185	417	4,602	1,285	150	1,435	221	1,214	
North	2,796	128	2,924	618	8	626	23	603	
Totals	15,986	1,542	17,528	4,048	525	4,573	555	4,018	

Total number of street lamps in the city, 21,546.

EXPENSE OF LIGHTING.

COMPANIES.	No. of Cubic Feet Consumed.	Amount.	Repairs, New Services, etc.	Lighting, Cleaning and Ex- tinguish- ing.	Thawing and Alcohol.	Total.
P. G. L. & C. Co	174,499,756	\$218,124 69	\$22,595 40	\$49,816 31	\$6,642 80	\$297,179 20
C. G. L. & C. Co	112,649,712	112,649 71	6,713 36	39,571 21	2,613 60	161,547 88

Total cost of lig	-		0150 505	00
maintaining g			\$458,727	08
Illinois Street G				
material and			0= =00	01
oil lamps			85,522	31
For lamp posts,				
and making		901 041 70		
cluding glass.		\$21,241 52		
Less amount				
from Special		F 907 00		
ment Depart	ment	5,397 00	15,844	59
C. G. L. & C. C	o., replac-		10,044	02
ing glass in I				
South Divisio			2,400	00
Total cost of	lighting			
the city	0		\$562,493	91
and the same		-		=
The contract	for furnish	hing the city	with gas	per
one thousand cu				
P. G. L. & C. C				
C. G. L. & C. C	o., Jan. 1 t	to Dec. 31, 18	87 1	00
The total cost	for gas pe	er lamp was as	s follows:	
	WEST D	IVISION.		
For gas consum	ed per lam	n per annum	\$22	95
For lighting and				
For new lamps				
			-	_
lotal			\$32	40

NORTH AND SOUTH DIVISIONS.

For gas consumed per lamp per annum\$15	39
For lighting and maintenance by the Co 6	74
For new lamps and repairs by the city 1	05
Total\$23	18
Cost of maintaining each oil lamp per month,	
as per contract \$1	80

PARKS.

The city is possessed of a series of small parks, in which I feel deep interest. They are located with a view to being made a resort for children and families, but somehow, it seems to have been the policy to give them very little attention. The appropriations for their maintenance have been barely sufficient to pay for attending them, whereas they should be made beauty spots, and to the citizen what the outlying parks are to visitors. They should be adorned with flowers and shrubbery, and no effort spared to make them attractive to the eye and pleasant to visit. Money used in this direction is wisely expended, for parks are educators after all, and to none more than the large class who are unable to get away from the smoke, dust and noise of the great city, and who seldom, if ever, get even a glance at the beauty, grandeur and wisdom of nature, as revealed in the trees and flowers.

The Lake Front Park demands special attention. Nestled by the side of the great lake, if it abounded with shade trees, flower-gardens, walks, fountains and comfortable seats, and enjoyed proper police surveillance, it would be a resort for thousands of people, and an ornament to the city.

I trust your Honorable Body will weigh these suggestions and exercise your best judgment in the treatment of the city parks.

The cost of maintaining the various public parks under the control of this Department during the past year, was as follows:

Lake Park	\$2,169	57
Ellis Park	1,033	02
Douglas Monument Square	834	01
Aldine Square	694	99
Campbell Park	188	00
Union Square	185	25
Washington Square	1,747	69
Holstein Park	575	40
Total expenditure	\$7,427	93

SPECIAL ASSESSMENTS.

SPECIAL ASSESSMENTS HAVE BEEN LEVIED AS FOLLOWS:

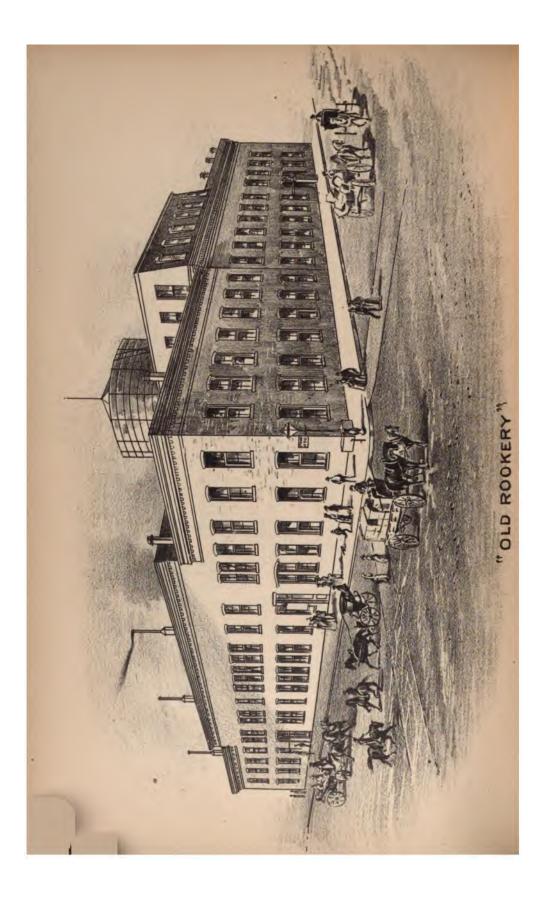
GRAND TOTAL.	Amount,	\$315,048.14 806,409.46 2,038,417.07	806 \$3,160,474.67
GR	No. of Independent Assessments.	93	888
Oil Lamps.	Amount.	\$87.00 2,539.25 4,390.50	\$7,017.35
0	No. of Independent Assessments.	17 29 29	47
Gas Lamps.	Amount.	\$ 3,005.25 14,532.28 31,273.00	\$48,900.53
Ö	No. of Independent Assessments.	34 34 89	111
Constructing Sidewalks.	Amount.	\$16,388.97 95,048.68 146,180.11	\$87,597.55 214 \$257,617.76 117 \$48,900.58
SS	No. of Independent Assessments,	34 34 162	214
Opening Streets and Alleys.	Amount,	\$40,935.87	\$87,597.55
Ope	No. of Independent Assessments.	00 00	9
Laying Water Service Pipes.	Amount	\$ 7,453.55 23,799.50 120,678.40	\$151,981.45
Lay	No. of Independent Assessments.	13 106	132
Laying Private Sewer Drains.	Amount,	\$ 4,920.50 14,938.25 86,784.00	121 \$106,642.75 132 \$151,931.45
Lay	No. of Independent Assessments.	100	
Improving Roadways of Streets and Alleys.	Amount,	\$283,702.27 614,615.63 1,602,449.38	229 \$2,500,767.28
R. St.	No. of Independent Assessments.	37 37 156	855
	DIVISION.	North South	TOTALS



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CITY HALL BUILDING.

The amount expended in the comple- tion of the building during the past		
year	\$ 7,032	83
Total amount previously expended	1,685,946	39
Total expenditure to Dec. 31, 1887.	\$ 1,692,979	22
Amount due on uncompleted contracts		
January 1, 1887	\$ 720	00
Estimated amount necessary to com-		
plete the city's portion of the rotunda,	20,000	00

The report of the Commissioner of Buildings shows that, during the past year, 4,833 buildings were erected, extending over an aggregate frontage of 115,506 lineal feet, or over 21th miles, at an estimated cost of \$19,778,100 the same being distributed in the divisions of the city as follows:

DIVISIONS.	NO. BUILDINGS ERECTED.	AGGREGATE FRONTAGE IN FEET.	FRONTAGE IN MILES.	ESTIMATED VALUE.
North	541	14,347	235	\$ 3,400,300 00
South	1,277	30,613	54	7,251,400 00
West	3,015	70,546	132	9,126,400 00
Totals.	4,833	115,506	214	\$19,778,100 00

COMPARISON WITH FIVE PREVIOUS YEARS.

					_
1882	3,113	73,161	13.8	\$19,803,500	00
1883	4,086	85,588	16.2	21,875,000	00
1884	4,169	98,782	18.6	25,862,000	00
1885	4,638	108,850	20.6	24,339,875	00
1886	4,651	113,144	21.2	27,040,382	50
1887	4,833	115,506	21.8	19,778,100	00
Totals for 6 years	25,490	595,031	112.2	\$138,698,857	50

There were moved under the supervision of the Department of Public Works, 878 frame, and 57 brick buildings, a total of 935. They varied from one to three stories high and extended over a surface of 18,086 lineal feet, or 3\frac{3}{6} miles of frontage.

CONCLUSION.

Having presented in brief a statement relating to the principal public improvements undertaken the past year and the cost of the same, together with the distribution of the funds appropriated and at the disposal of this Department, I take pleasure in inviting your Honorable Body to an examination of the following itemized reports of the heads of the various bureaus.

Yours respectfully,

GEO. B. SWIFT,

Commissioner of Public Works.

MISCELLANEOUS DATA.

Chicago covers an area of nearly	
thirty-seven square miles, or	23,680 acres.
Population of the city	850,000
Assessed valuation of real and per-	
sonal property	\$161,204,535.00
Number of public school buildings.	98
Average number of children attend-	40.000
ing school	75,000
Number of teachers	1,650
Number of churches	290
Number of railroads entering the	
city	66
Number of street car lines	4
Number of miles of street railroad	
track laid	113
Number of police station buildings.	20
Number of men employed on the	
force	1,145
Number of fire engine houses	47
Number of firemen employed	582
With two fire boats and forty steam	
engines.	
Number of acres in public parks	789
Number of miles of drives in parks	
and boulevards	57%
Number miles of walks in parks	20
Number miles of streets in city	$638\frac{1}{3}$

Number miles of paved streets	306\$
Number miles of sidewalks	1,0071
Number miles of main sewers	4721
Number miles of water mains	6381
Number miles of water tunnels	9
Number of bridges over Chicago	
river	33
Number of viaducts	28
Number of street lamps	21,546
Number miles of river frontage	
(counting both sides)	41
Number vessels arriving and leaving	21,748
Representing a tonnage of	7,858,080
Number feet of lumber received	1,850,037,000
Number bushels of grain received	132,506,776
Number hogs, cattle and sheep rec'd	9,213,752
Bank clearings for the year \$	2,969,216,210 00
Amount passing through money or-	
der department of postoffice,	\$10,237,191 91
Amount of receipts from postal acc'ts	\$2,336,256 36
Number pieces mail matter received	
and delivered	337,480,445
Number tons mail matter handled	
yearly	89,900
There are employed in the service	e 30 wagons and
1,366 persons.	

REPORT

OF THE

CITY ENGINEER,

CITY OF CHICAGO.



ENGINEER'S REPORT.

CHICAGO, March 1, 1888.

HON. GEO. B. SWIFT,

Commissioner of Public Works.

DEAR SIR:—I submit herewith the Twelfth Annual Report of the Bureau of Engineering under the Department of Public Works, being for the year 1887.

WATER SUPPLY.

In former reports it has been customary to give tables setting forth all the particulars connected with the water supply, but at this time it is impossible to do so with any degree of certainty.

Due credence is still given to the records of the West Pumping Works, but expert examination has developed the fact that at the North Works the amount of water pumped has been greatly overrated.

On the 29th of November Mr. T. T. Johnston, Assistant Engineer, was detailed to make an examination of the pumps at that Station. An examination of the north or '67 engine demonstrated that, owing to the cylinder and valves being badly worn, the pumps were not doing more than one-half of what they should do, and that a great deal of water was lost when the engine was idle by leakage from the mains through the pumps back into the well.

The pumps were at once bored out and new valves and packing put in, and general repairs made; they are now working in a fairly satisfactory manner.

The '72 or south engine was next examined and also found to be in a very unsatisfactory condition. Exhaustive reports of the condition thereof have been furnished you.

The tables concerning the pumpage of the West Works are given as received, but no total quantity for the combined works nor general average can be given for the reason already stated.

Mr. Johnston's report is inserted in full with the other reports from the North Station.

The Holly engines were completed and put in operation in June.

They were subjected to a formal test under the direction of a Board of Experts consisting of Messrs. Thurston, Coon and Warrington, whose reports have been furnished you.

CHICAGO, February 1, 1888.

To the City Engineer, Chicago:

DEAR SIR:—The twelfth annual report of the operation of these works, being for the year ending December 31, 1887, is herewith submitted.

During the past year the four (4) engines located at these works have been pumping in a very satisfactory manner. The two old, or 1876, engines were shut down for two weeks, alternately, during the months of October and November, and were thoroughly overhauled; otherwise the engines were run very steadily during the year.

BOILERS.

The boilers are at present in good condition; the old boilers have been in constant use for the past twelve years, and during the year the tubes were taken out and repaired and the boilers cleaned throughout.

Assistant engineers Stewart, Commons and Sanborn, and clerk H. Bartels, and the other employes at these works, have been faithful in the discharge of their respective duties.

Respectfully submitted,

HENRY MASON.

Chief Engineer.

OPERATIONS OF ENGINES AND BOILERS AT WEST PUMPING WORKS, 1887.

DUTY.	56,800,000 57,800,000 57,800,000 57,800,000 61,900,000 61,900,000 58,000,000 54,400,000 54,400,000	58,300,000
Average head against Pumps in feet.	0.0897.8598.000	97.8
Total Pounds of Coal	9, 485,000 9, 485,000 9, 485,000 9, 485,000 9, 187,800 9, 187,800 9, 046,800 9, 087,800	28,170,800
Pounds of Coal consumed per Month for chang- ing Boilets.	4,4000 6,4000 6,00	4,758 4,758 160
Average No. of Pounds of Coal consumed per Day for Pumping.	85,932 88,610 84,836 81,636 77,900 77,900 72,090 65,897 78,060	77,091
Pounds of Coal consumed per Month for Pump-	2,663,900 2,441,000 2,440,100 2,440,100 2,255,300 2,182,700 2,182,800 2,182,800 2,042,800 2,042,800 2,042,800 2,042,800	2,842,808
Average No. of Gallons pumped per Day, less 5% per cent.	60,277,400 58,700,680 57,156,050 57,156,050 56,968,052 56,968,262 56,968,400 58,134,146 45,746,996 48,744,954	54,942,093
Total No. of Gallons of Water pumped per Month, less 5% per cent, for loss of Action in Pump.	1,868,568,000 1,818,531,100 1,714,681,520 1,767,785,680 1,765,820,140 1,690,814,860 1,689,724,400 1,418,456,880 1,418,456,880 1,418,456,880 1,418,456,880 1,418,456,880 1,418,456,880 1,418,456,880	20,045,528,600 1,670,460,710
Average No. of Revolu- tions per day.	58,552 58,028 56,817 55,516 55,516 55,428 55,943 56,609 44,247 44,247 50,609	58,838
Total Revolutions per	1,815,123 1,734,377 1,735,245 1,718,245 1,718,728 1,639,758 1,611,173 1,611,173 1,811,645 1,415,733 1,570,903	1,621,517
Average No. of Hours run per day.	24 24 24 24 24 24 24 24 24 24 24 24 24 2	24:00
No. of Hours run per	H, M, 744:00 744:00 744:00 744:00 744:00 744:00 744:00 744:00 744:00 744:00 744:00 744:00 744:00 744:00	8,760:00
No. of Days.	28228222222222	365
MONTHS. 1887.	January February March April May. June July August September October. November	Totals Average per Month.

The following table shows the total quantity of water pumped and the hours run by the four (4) engines, respectively:

Engines Designated as	Hours Run.	Revolutions Made.	Gallons of Water Pumpe Less 5½ per cent. for Loss of Action.
No. 25.	7,758.10	4,829,905	4,829,905,000
·· 26.	7,756.40	4,889,644	4,889,644,000
" 5 0.	8,441.40	4,895,389	5,189,112,840
" 51.	8,455.45	4,893,271	5,186,867,260
Totals	82,412.15	19,458,209	20,045,528,600

The total pumpage of 1887 is in excess of the pumpage of 1886 about 600,000,000 gallons.

The following table shows the cost of repairing of engines and boilers, cost of repairs per million gallons, average cost of coal per ton, total cost per million gallons pumped and cost one foot high up to December 31st, 1887:

Year.	Gallons Pumped.	Head Against Pump. Feet.	Cost of Repairs of Engines and Boilers.	Cost of Repairs per Million Gallons.	Av'rage Cost of Coal per Ton.	Total Cost per Million Gallons	Cost per Million Gallons One Foot High.
1877	7,088,127,000	109	\$1,123.61	\$0.15,85	\$5.22	\$6.66	\$0.0611
1878	8,418,918,000	106	583.66	06,98	3.67	5.45	.05100
1879	9,404,588,000	101	1,879.70	23,19	2.62	5.02	.04 98
1880	8,648,673,000	98.3	366.96	0424	3.60	5.15	.05 24
1881	9,572,845,000	90	1,100.18	11 an	3.60	5.25	.05 44
1882	10,000,750,000	88.2	854.90	08,84	3.90	5.00	.05,88
1883	10,376,678,000	85.1	2,345.63	22 40	4.10	5.09	.05 98
1884	13,880,933,680	90.5	1,285.58	09,26	2 96	4.96	.0548
1885	19,447,521,980	105	2,002.11	10,28	3.35	4.95	.0471
1886	19,454,388,260	100.9	2,634.62	13 80	3.18	4.80	.04 75
1887	20,045,528,600	97.3	3,648.03	18100	3.10	4 49	.04 61

TABLE SHOWING QUANTITY OF WATER PUMPED BY WEST PUMPING WORKS COMBINED, EACH MONTH DURING THE PAST ELEVEN YEARS.

MONTHS.	1877.	1878.	1879.	1880.	1881.	1882.	1888.	1881.	1885.	1886,	1887.
January	863,507,000	068,352,000	845,968,000	579,725,000	885,170,000	765,040,000	987,631,000	955,490,000		1,764,123,000 1,740,986,300	1,868,568,900
February	630,355,000	585,950,000	775,107,000	626,542,000	800,886,000	740,278,000	840,848,000	889,546,000	1,658,860,700	1,554,614,700	1,672,601,080
March	454,972,000	660,264,000	846,632,000	696,280,000	868,546,000	806,646,000	905,736,000	954,418,000	1,748,143,230	1,631,985,000	1,813,521,100
April	422,888,000	798,902,000	828,126,000	683,913,000	797,300,000	821,658,000	881,065,000	980,908,000	1,498,356,720	1,390,009,720	1,714,681,530
May	473,630,000	781,498,000	858,911,000	720,602,000	845,572,000	852,200,000	913,965,000	952,907,000	1,632,307,930	1,614,370,400	1,707,735,680
June	485,779,000	800,213,000	830,642,000	727,179,000	812,954,000	828,842,000	892,912,000	928,524,000	1,596,137,630	1,615,050,600	1,688,071,560
July	618,043,000	789,700,000	738,578,000	794,964,000	876,338,000	858,186,000	929,824,000	1,061,390,500	1,729,898,200	1,669,581,840	1,765,820,140
August	666,286,000	784,651,000	735,461,000	828,475,000	892,158,000	864,874,000	941,678,000	1,482,553,340	1,675,467,160	1,684,536,500	1,690,814,300
September	635,651,000	721,236,000	675,686,000	717,849,000	843,576,000	832,256,000	909,998,000	1,404,673,420	1,598,727,930	1,646,232,280	1,563,724,400
October	624,664,000	687,267,000	688,678,000	734,456,000	579,467,000	866,076,000	981,634,000	1,381,246,700	1,592,069,440	1,658,388,920	1,418,456,880
November	599,707,000	486,168,000	764,259,000	722,878,000	574,679,000	829,408,000	619,437,000	1,816,406,000	1,477,747,780	1,477,747,780 1,559,988,100	1,462,948,640
December	612,665,000	004,717,000	831,530,000	816,317,000	798,199,000	913,190,000	772,400,000	1,624,570,660	772,400,000 1,624,570,660 1,480,781,700 1,685,573,820	1,685,573,820	1,618,554,340
TOTALS	7.088,127,000	8,418,918,000 9,404,588,000	9,404,588,000	8.648,673,000	9.579.845.000	000 022 000 01	10.876.678.000	13 891 998 680	9.579 845 000 10 000 254 000 10 370 570 500 10 500	10 454 300 900	DI DES 200 UN

Coal Received and Used in 1887, as follows:

On hand January 1st, 1887—			Tons.	Lbs.
Pittsburgh Nut			180	1,200
Pittsburgh Lump			59	550
Pittsburgh Screenings			77	1,800
Received from W. P. Rend &				
Co. during the year—				
Pittsburgh Nut			5,596	700
Pittsburgh Lump			5,558	1,285
Pittsburgh Screenings			2,962	1,820
Pittsburgh Pea Coal			495	650
Coal Used—	Tons.	Lòs.		
For pumping, heating building, etc.	14,056	1,700		
For changing boilers	28	1,100		
On hand January 1st, 1888	795	105		
Totals	14,880	905	14,880	905

Expenses Due to Pumping, 1887.

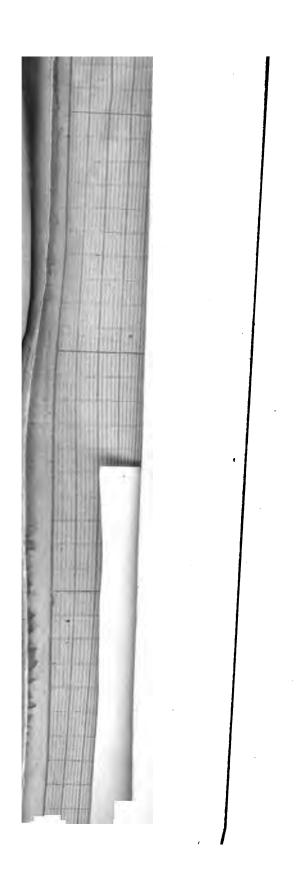
Salaries		\$87,005.17
Coal,	14,085 800 tons	43,762.65
Cylinder oil,	1,828½ gals	1,005.99
Lard oil,	200 gals	118.5 5
Lubricating compound,	4,851 5% lbs	1,082.88
Cotton waste,	3,567 lbs	313.66
Gas,	1,385,400 cubic feet	1,851.71
Repairs to engines and	pumps	1,024.50
Repairs to boilers		2,623.58
Fire brick and clay		198.00
Fire tile		79.60
Rubber and packing		310.37
Rubber valves in main p	ump	485.10
Pipes and fittings		126.89
Castings (grate bars, etc	:)	182.43
Blacksmithing, fire tools	, etc	125.79
Lumber		160.55
Hardware		18.14
Small stores		321.32
Ice		58.50
Total expense		\$90,849.78

Number of Gallons of Water Pumped during the Year, 20,045,528,600.

Cast of pumping	\$90,849.78
Cost to pump one million gallons	4.49
Average head against pump during year in seet	97,3
Cost of delivering water per million gallons (one foot high)04 a1
Cost of repairs of engines and boilers per million gallons.	18
Distributed as follows: To engines	
To boilers	18,88

The following table shows the cost of delivering water per million gallons during the past eleven years, and average cost of coal at works.

Years.	Cost of Coal per ton.	Total cost per million gals.
1877	\$5.22	\$ 6.66
1878	8.67	5.45
1879	2.62	5.02
1880	3.60	5.15
1881	8.60	5.25
1882	8.90	5.00
1883	4.10	5.09
1884	2.96	4.96
1885	8.85	4.95
1886	8.18	4.80
1887	8.10	4.49
Average for eleven years	\$3.58	\$5.17





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NORTH PUMPING WORKS.

CHICAGO, March 3, 1888.

To the City Engineer.

SIR:—I have the honor to submit herewith the Thirty-fifth Annual Report of this station, for the year ending December 31, 1887.

No report of the water pumped for the year by these works can be given, as the records of the engines for the greater part of the year were based on the hypothesis that the engines were pumping their original capacity at each revolution, which has been demonstrated not to be a fact.

A report, showing in extenso the causes of the discrepancy between the accredited and actual work of each engine, and also showing, where possible, the approximate amount of work done by each engine has been already prepared and submitted to this bureau.

As the amount of the yearly pumpage cannot be had, it follows that no monthly nor daily pumpage or averages can be given, and the tables deduced therefrom (and which have always been the prominent feature in former reports), are perforce regretfully omitted.

On other matters I report as follows:



FUEL.

565	1,800
14,156 14,105	160 775 1.185

DISBURSEMENTS.

DISBURSEMENTS.	AMOUNT.
Wages and labor	\$45,049.62
Coal	84,433.71
Lubricators and lard oil	1,017.75
Waste	273.64
Packing	103.91
Supplies	644.94
Gns	1.159.20
Repairs of engines	1,251.88
Repairs boilers	228.46
Buildings and grounds	1,110.17
Miscellaneous	93.13
Share of stable expense	360.47
Total	\$185,726.88

GENERAL ITEMS.

BUILDINGS AND GROUNDS.

The buildings are in fairly good condition, but need considerable cleaning and painting.

The grounds are in good condition, but there is much necessity for a substantial sidewalk around them, as the present affair—a cinder walk—is almost entirely submerged in wet weather, and at such periods can not be used.

NEW ENGINES.

In June two new Gaskill pumping engines, with a daily capacity of 24,000,000 gallons, were put in operation. In October the same were tested by a board of expert engineers with successful results. These engines are running now and in a satisfactory manner.

OLD ENGINES.

The '53 engine is still pumping, but from long usage is hardly fit to be continued in service.

The '57 engine, considering its age, construction and service is doing good work.

The '67 engines have been thoroughly overhauled, the pumps bored out (and consequently somewhat enlarged in capacity), and are now running in a fairly satisfactory manner.

The '72 engines have been in a very deplorable state of repair which has much interfered with their usefulness. They are now undergoing thorough repairs.

BOILERS.

The north boiler, in the north boiler room of the old engine house—placed in position in 1867—and which has been mentioned in former reports as unfit for use, is still in service, in a much-emphasized bad condition. To replace it are needed a boiler or boilers of modern construction. All the boilers in the old

works have been subjected to long use, but attention is most particularly directed to this one.

SHOP.

On account of the great increase in the demand for the products of the workshop, the latter in its present condition is unable to keep up in its work. The enlargement of the shop and the placing of new and modern machinery in it are recommended; in particular, the purchase of a planer or shaper seems a necessity.

SHOP RETURNS FOR THE YEAR.

	CHARGE.	EXPENSE.
Total expenditure, including stock on hand January 1, 1888		\$35,321.02 3,792.02 419.58
Total		\$39,532.62
Charged as follows—		/
New hydrants and stop-valves. Repairs hydrants and stop-valves. Pipe extension. Meter Department. North Pumping Works. Shop—operating and maintenance. City Hall. Stock on hand January 1.	\$25,730.60 2,080.55 285.15 2,855.24 978.67 1,982.67 30.75 5,634.77	<i>/</i> .
Total		

ENGINEER'S REPORT.

HYDRANTS AND VALVES.

	On Hand Jan. 1, 1887.	On Hand Jan. 1, 1888.	Made During Year.
Single hydrants			100
21/2 in. double hydrants	25	2	39 1
4 in. hydrants	. 		4
4 in. valves	6	26	53
6 in. valves	16	25	203
8 in. valves	11	8	79
12 in. valves		5	24
16 in. valves		2	14
24 in. valves	2	2	2
Total	60	65	870

STABLE.

The building is in good condition and the horses and different vehicles are in a satisfactory state. During the year the unsuitable horses have been disposed of and better ones purchased in their place.

Very respectfully, your obedient servant,

HENRY WELCH,

Chief Engineer North Pumping Works.

CHICAGO, January 19, 1888.

MR. WM. R. NORTHWAY.

Acting City Engineer.

DEAR SIR:—The following is a statement of the condition in which I found the "North" or '67 pumping engine at the North Side Pumping Works, at the time the repairs (now nearly completed) were commenced:

The pistons in the pump-barrels were of too small diameter, allowing considerable water to pass them.

The water-valves were in very bad condition; of the seventy-two (72) small double-beat valves none of them took either the top or bottom seat fairly, the rule being to touch at the three points on the lower seat and not at all on the upper seats. In one case I noticed one-eighth (1/8) of an inch between the upper face and its seat when the lower face rested on its seat. Of the eight (8) large double-beat valves, half of them were in fair condition, two others badly worn, and two others worn out. These valves have wooden seats, all of which had to be renewed. In those valves most badly worn the wooden seat was gone in places, so that a lead pencil could be inserted in the apertures.

The pump-barrels were so badly worn that they had to be bored out, in order that a piston, properly made, may work effectively. The barrel of the north pump was found to be so much out of its proper

alignment that a properly made piston never could have worked effectively.

The steam end of the machine was, all things being considered, in reasonably good condition, though needing ordinary repairs.

I have possession of a set of cards taken in July, 1887, giving 210 indicated horse-power when making ten (10) revolutions. If the engine had been in good order there should have been about 350 indicated horse-power. As it was, it is not probable that the effective work of the machine was more than one-third of its capacity.

This pump was usually allowed to stand idle during the night, and at such times a very large amount of water must have passed from the water mains through the valves and into the pump well.

Very respectfully,

THOS. T. JOHNSTON,

Assistant Engineer.

RAINFALL AND TEMPERATURE.

The following tables of Rainfall and Temperature are furnished through the courtesy of the Signal Service Observer at this station, Mr. H. C. Frankenfield.

STATEMENT SHOWING THE PRECIPITATION FOR EACH DAY OF THE YEAR 1887.

												_
DAYS OF THE MONTH.	January.	February.	March.	April.	May.	June.	July.	August,	September	October.	November	December
1		.13			.06	.08	.02	****		.05	*T	
2		.01				.02	*T		.07	.51	*T	.16
3							.45		.01			1.04
4	.12		*T	*T		.15	.09	.01				T.
5	*T	*T	.30		.16	.39	.03	*T	.50		*T	*T
6	.03	.42	.27			.01			.05	.15	*T	*T
7	*T	.44	*T		*T							
8	.04	1.10	*T	*T	*T	.17			· cure	*T		
9	.13		*T	,		.01	.37		.06	.46	.26	.01
10		.43			*T		*****			.02		.60
11		.27			.03			.98	*T	*T	*T	.51
12					*T					*T	*T	a-T
13	.20							.01			*T	*T
14	.47	.39	*T					1.23		T*	.07	*T
15	.01	.04		*T						Te		*T
16			*T	*T			*T					
17	*T	1.02	*T		.17		.04	.11			*T	
18		.40		*T'			.02		*T		*T	*T
19		*T				*T			*T	*T	.37	.02
20		.02		.13		.70	*T	*T	*T	.02	*T	.22
21	, ,	.03	.05	*T	.01	*T	.03	.43	.33	*T		*T
22	1.39	.01	*T	.18	.08		*T	24	1.00	.80	*T	
23	.26	.16	*T		.01	*T		.24	.30	.52	*T	.04
24	*T	.01	.03	*T	.04			*****		*T	.60	
25	.04			*T					.01	16661	.19	*T
26	.03	.22	*T	.03				.10	.23	Te	.40	****
27			.19	.03				10.1910	.37	*T	.52	.30
28	*T		.05	.09					.19			.05
29					*T				.75	*T		
30	.01			****	.38	.10	*T	*****	.16			.36
31	.40		*T		.44			*****				.36
TOTALS	3.13	5.10	.89	.46	1.38	1.63	1.05	3.35	4.03	2.03	2.41	3.67
DOTTO J	Innatas		£ manai	dentine	THE PERSON NAMED IN	atal far	man 9	0 19 :	han			

[&]quot;"T" denotes trace of precipitation. Total for year 29.13 inches.

STATEMENT SHOWING THE MEAN TEMPERATURE FOR EACH DAY OF THE YEAR 1887.

_	Division of the Park 1991											
DAYS OF THE MONTH.	January.	February.	March.	April.	May.	June.	July.	August.	September	October.	November	December
1	1.6	14.0	46.1	38 0	68.0	55.0	77.3	75.0	74 3	56.7	51.7	33.3
2	-4.8	23.2	36.3	48.5	68.3	54.7	76.0	78.3	67.8	60.0	51.3	37.7
3	-2.5	12.5	30.0	60.3	56.7	63.7	76.3	83.0	68.3	57.7	57.0	43.7
4	18.1	10.8	24.8	25.1	53 3	71.7	75.7	80.7	72.0	46.7	40.3	36.0
5	5.2	29.5	29.5	29.0	46.7	55.3	73.0	74.7	71.3	46.0	41.7	28.3
6	-0.5	81.7	36.5	38.8	52.3	57.0	76.0	71.3	80.7	58.7	52.3	37.3
7	2.4	43.7	38.8	39.6	50.7	71.0	78.0	73.3	64.7	70.7	58.3	38 7
8	12.6	40.6	44.0	50.3	59.3	78.7	81.0	73.3	66.0	68.7	40.3	38.7
9	11.7	34.4	38.4	64.2	61.0	52.7	73.8	81.0	66.0	62.7	38.0	37.8
10	-5.9	39.5	33.1	65.3	59.0	55.7	78.3	80.7	55.7	52.0	36.0	38.7
11	16.7	18.3	38.9	43.3	59.0	63.7	78.3	71.7	59.7	43.7	37.0	30.7
12	26.5	2.9	55.4	57.0	56.3	67.3	84.7	67.3	67.3	43.0	39.0	24.7
13	30.8	22.1	28.9	61.7	58.0	71.3	75.7	69.7	70.3	45.0	44.7	35.3
14	25.0	35.1	24.2	68.1	64.3	68.3	78.3	67.3	64.3	42.3	40.7	34.3
15	18.1	33.3	26.5	48.9	57.7	79.7	86.3	67.7	59.3	50.7	41.0	28.0
16	26.9	29.2	29.4	36.3	56.7	80.3	87.7	66.7	55.7	57.3	42.0	27.7
17	7.3	34.6	27.3	38.0	49.0	83.3	83.7	67.3	59.7	49.7	35.3	27.3
18	-4.3	32.5	26.7	39.1	56.0	76.0	70.0	72.0	61.7	50.0	38.0	35.7
19	27.1	23.5	28.8	48.1	64.7	71.0	70.7	67.3	63.3	50.3	26.7	41.3
20	32.2	28.4	30.4	49.5	74.7	73.0	71.3	70.0	69.0	46.3	#	38.0
21	27.5	31.0	31.1	52.0	71.0	68.0	72.0	68.7	67.8	34.0	#	8.3
22	43.0	32.7	27.7	52.1	72.0	62.7	71.0	67.7	57.3	36.0	36.7	11.3
23	29.2	81.7	36.6	36.6	59.0	57.0	65.7	58.7	48.0	44.0	38.3	20.7
24	31.3	22.8	85.4	38.1	65.7	60.7	69.0	58.0	51.0	34.0	37.0	14.3
25	30.4	30.5	28.9	44.3	57.3	67.3	69.7	60.3	57.3	24.0	37.3	20.3
26	18.5	23.5	29.3	40.7	51.3	65.7	76.3	60.0	52.7	35.0	41.3	24.3
27		14.7	25.1	47.1	54.7	68.0	81.3	60.7	53.7	42.7	17.3	27.7
28	36.3	32.8	16.7	55.7	58.0	70.3	70.3	62.3	57.0	48.3	8.7	-0.7
29	36.3		18.4	46.3	67.8	74.0	79.3	66.7	58.7	35 3	27.0	3.3
30	2.2		26.8	61.5	61.0	79.7	79.7	67.0	56.7	33.3	33.3	15.7
31	8.4		38.0		53.7		74.0	71.3		41.3		33.3
MEANS	16.9	27.1	31.9	47.4	59.4	67.3	76.0	69.7	62.5	47.3	38.7	28.1
	and ince	-malate			om of an	heaken						

WATER PIPE EXTENSION.

The amount of water pipe laid during the year is far in excess of any previous year, the net increase being about 42¼ miles.

Of this amount nearly 101/2 miles was laid in Section 36, formerly a part of the Town of Jefferson.

Property owners have advanced the money to lay 26,987 feet of pipe on streets where but little or no revenue is derived at present. Such money will be refunded when the required revenue is received.

We have taken up or abandoned 11,129 feet of pipe and have replaced it with pipe of larger size,

The total amount of pipe of all sizes in use by the city on December 31, 1887, is 6381414 miles.

We have in service, in connection with the system, 4,736 stop valves and 5,899 fire hydrants.

Fire cisterns were built during the year as follows:

At intersection of State and Jackson streets.

At intersection of Adams and Dearborn streets.

At intersection of Lake and La Salle streets.

At intersection of Lake and Franklin streets.

At intersection of Lake St. and Michigan avenue.

Water mains heretofore laid have been lowered to a depth of five and one-half feet below the established grade on the following streets:

Indiana avenue, from Thirty-third street to Thirtyfourth street. Indiana avenue, from Thirty-seventh street to Egan avenue.

Prairie avenue, from Thirty-third street to Egan avenue.

Forrest avenue, from Douglas avenue to Thirty-eighth street.

Thirty-seventh street, from Grand boulevard to State street.

Jackson street, from Halsted street to Aberdeen street.

Jackson street, from Loomis street to Laflin street. Sheldon street, from Fulton street to Carroll street. The following tabulated statement shows in detail the work done in water pipe extension during the past year:

SOUTH DIVISION.

	STREET.	FROM	то	Length of Pipe in feet.	Size in inches.
Are	cher avenue	Thirty third court	350' N. E. of Douglas ave	1350	6
As	hland avenue	Crossing	Egan avenue	22	6
Bla	ke street	Crossing	Archer avenue	36	4
Blo	om street	Crossing	Thirty-fourth street	41	4
Bu	tler street	Crossing	Douglas avenue	80	6
Bu	tterfield street	Crossing	Egan avenue	19	6
Ca	lumet avenue	Crossing	Thirty-seventh street.	74	6
Ca	lumet avenue	Crossing	Egan avenue	28	6
Ch	amplain street	Archer avenue	Thirty-sixth street	328	6
Ch	amplain street	Thirty-third street	Thirty-fourth street	641	6
Ch	arlton street	Crossing	Douglas avenue	30	6
Ch	arlton street	Thirty third street	Thirty fourth street	645	6
Da	shiel street	Crossing	Thirty-second street	25	6
De	arborn street	Crossing	Egan avenue	19	6
Do	uglas avenue	Iron street	Eastward	380	6
Do	uglas avenue	Crossing	Archer avenue	110	6
Do	uglas avenue	Lowe avenue	Wallace street	334	6
Do	uglas avenue	Parnell street	Portland avenue	1680	6
Do	uglas avenue	Dashiel street	Lowe avenue	336	6
Eg	an avenue	Ashland avenue	Westward	300	6
	an avenue	South Park boulevard.	Aldine street	860	12
Eg	an avenue	Prairie avenue	Wentworth avenue	2981	8
#F	ifth avenue	Thirty-seventh street .	Thirty-sixth street	636	6
Fif	fth avenue	Crossing	Douglas avenue	48	6
Fis	sk street	Springer avenue	Southward	320	6
	x street	Thirty-third street	Northward	110	6
Ga	ge street	Crossing	Douglas avenue	45	6
	and boulevard	Egan avenue	Northward	100	12
Gr	oveland Park	Cottage Grove avenue.	Eastward	467	6
Gr	oveland Park	East end of Pipe	Southward	246	6
Ha	nover street	Crossing	Douglas avenue	80	6
Ho	yne avenue	Archer avenue	Thirty-third street	1405	8
Irc	n street	Crossing	Douglas avenue	77	6
Jai	mes avenue	Laurel street	Eastward	371	6
Jas	sper street	Crossing	Douglas avenue	30	8
La	flin street	Crossing	Douglas avenue	30	6
La	Salle street	Crossing	Egan avenue	19	6
Li	ncoln street	Crossing	Douglas avenue	75	6
Lo	ckport street	Crossing	Archer avenue	52	6
Lo	ng John street	Crossing	Archer avenue	125	8
Lo	ng John street	Crossing	Douglas avenue	26	8
Lo	omis street	Crossing	Douglas avenue	30	6
#1	owe avenue	Thirty-second street	Thirty-third street	641	8

^{*}Laid at expense of property owners.

STREET.	FROM	то	Length of Pipe in feet.	Size in inches.
Lowe avenue	. Crossing	Douglas avenue	73	6
Lundy street	Thirty-third street	Thirty-fourth street	641	6
Lundy street	Thirty-seventh street	Northward	200	6
	Crossing	Egan avenue	19	6
Market Square		Archer avenue	36	6
Marshfield avenue	Crossing	Douglas avenue	26	4
Napoleon Place	Crossing	Stewart avenue	70	6
Parnell avenue	Crossing	Douglas avenue	32	6
Parnell avenue		Egan avenue	662	6
	Crossing	Douglas avenue	44	6
Portland avenue.		Archer avenue	600	6
Portland avenue	Twenty-fifth street		641	6
Prairie avenue	Egan avenue	Northward	541	6
Quincy street	Market street	Westward	200	8
Robey street	Douglas avenue	Thirty-eighth street	1654	8
Saratoga street	Crossing	Archer avenue	120	8
	Crossing		80	6
Stanton avenue	Crossing	Egan avenue	19	6
State street	Crossing	Egan avenue	19	8
Stewart avenue	Twenty-ninth street	Swift place	280	8
Stewart avenue	Thirtieth street	Southward	130	
Stewart avenue	Twenty-seventh street.		535	6
Sullivan court			28	4
Summit street		Archer avenue	72	6
Thirtieth street	Crossing	Stewart avenue	80	16
*Thirty-second st	Wallace street	Dashiel street	665	6
Thirty-third street	. Hoyne avenue	Champlain street	333	6
	Ashland avenue		314	6
Thirty-third street	. Hoyne avenue	Lundy street	317	6
Thirty-third street	Laurel street	Auburn street	665	6
Thirty-third street	Fox street	Ullman street	670	6
Thirty-third street	Crossing	Archer avenue	72	8
Thirty-third court.	Crossing	Archer avenue	42	6
Thirty-third court	Paulina street	Wood street	920	6
Thirty-fourth st	Crossing	Archer avenue	30	6
Thirty-fourth st.	Wood street	Paulina street	658	8
Thirty-seventh st	Tucker street	Westward	150	6
Thirty-eighth st	Crossing	Prairie avenue	74	6
Thirty-eighth st	Crossing	Forrest avenue	30	6
Thirty-eighth st	Crossing	La Salle street	75	8
Tucker street	Crossing	Douglas avenue	48	4
Twenty-eighth st.	Crossing	Wallace street	31	6
Twenty eighth st.		Stewart avenue	80	6
Twenty-ninth st			29	8
	Crossing	Stewart avenue	80	6
Vernon avenue	Crossing	Egan avenue	25	6
Vernon avenue	Thirty-seventh street	Southward	400	6
Wabash avenue, east side	Harrison street	Twelfth street	2529	6
Wahash aronne west sid	Harrison street	Twelfth street	2529	6

^{*335} feet of this laid at expense of property owners.

STREET.	FROM	то	Length of Pipe in feet,	Size in inches.
Wabash avenue Wallace street Wentworth ave	Thirty-third street	Southward	19 368 19	6 6
Wood street,	Crossing	Archer avenue	60	12
Woodland Park Woodland Park	Cottage Grove avenue. East end of Pipe		526 250	6
First alley S. of Douglas ave	93' E. of Cottage Grove ave	Eastward	362	4
Second alley S. of i Douglas ave	Cottage Grove avenue.	Eastward	134	4
First alley E. of Cot-	Second alley N. of Douglas ave.	Southward	50	4
First alley N. of [Thirty-first st]	Bonfield street	Westward	130	4
Alley E. of Sul-	Sullivan court	Southward	294	4
irran court		hydrants	35032 619	4
	Add branch pipe for		656	6
	Total feet laid in	South Division	36307	

NORTH DIVISION.

STREET.	FROM	то	Length of Pipe in ft.	Size in Inches.
Blackhawk street. Clay street. Clyde street. Crosby street. Franklin street. Fullerton avenue. Fullerton avenue. Hammond street. Herndon street. Illinois street. Jay street Ontario street.	Add branch pipe for hy Add branch pipe for hy	Southward Southward Southward Menominee street. Eastward Sheffield avenue. Wisconsin street. Belden avenue, Eastward Southward Eastward Clybourn avenue. Oak street. At Fullerton avenue. Northward Westward Cleveland avenue.	660 883 331 606 200 204 224 48 600 620 1120 915 304 106 236 1215 1275 6 174 333 428 10488 92 465	66 66 66 66 88 86 66 88 86 66 86 66 44 66 66

WEST DIVISION.

California avenue. Twenty-sixth street. Northward. 979 California avenue. Lake street. Walnut street. 500 California avenue. Fifteenth street. Ogden avenue. 70 California avenue. Milwaukee avenue Stave street. 700 California avenue. North avenue. Armitage avenue. 2641 California avenue. Division street. Armitage avenue. 5410 California avenue. Thomas street. Division street. 667 California avenue. Crossing. Twenty-second street. 23 Central Park ave. Ohio street. Northward. 315 Claremont avenue. Taylor street. Southward. 212 Church court. Morgan street. Aberdeen street. 712 Chicago avenue. Avers avenue. Rockwell street. 1330 Chicago avenue. Avers avenue. Lawndale avenue. 1000 Clifton Park ave. 400 feet 8. of Twenty-third st. Collier street. 502 Colorado avenue. Madison street. Southward. 75 *Congress street. Spaulding avenue. Homan avenue. 666 Congress street. Spaulding avenue. Homan avenue. 666 Congress street. Crossing. Sacramento street. 25	STREET.	FROM	то	Length of Pipe in feet.	Size in inches.
Albany avenue. Lake street Fulton street 820 Alice place Western avenue. Perry avenue. 1076 Allport street. Twenty-first street Twenty-second street. 638 Armitage avenue. Milwaukee avenue. Westward. 1800 Armitage avenue. Crossing California avenue. 126 Armitage avenue, Hoyne avenue. Eastward. 350 Armitage aven. south side. Hoyne avenue. Eastward. 350 Ashland court. Ashland avenue. Eastward. 223 Augusta street. Robey street. Lincoln street. 573 Augusta street. Lincoln street. Newton street. 259 †Avers avenue. Huron street. Chicago avenue. 670 Avers avenue. Indiana street. Kinzie street. 640 Basil street. Crossing. North avenue. 48 Bingham street. Ashland avenue. Cornelia street. 1220 Blackhawk street. Noble street. Luce street. 1220 Blackhawk street. Dickson street. R. R. Tracks. 240 Blanche street. Dickson street. Westward. 90 Blanche street. Dickson street. Southward. 90 Boulevard way Twenty-fifth street. Southward. 200 Boulevard way Twenty-fifth street. Southward. 200 California avenue. Chicago avenue. Iowa street. 485 California avenue. Chicago avenue. Southward. 90 California avenue. Chicago avenue. Iowa street. 485 California avenue. Chicago avenue. Southward. 907 California avenue. Chicago avenue. Southward. 907 California avenue. Chicago avenue. Iowa street. 485 California avenue. Chicago avenue. Stave street. 456 California avenue. Chicago avenue. Stave street. 456 California avenue. Twenty-fifth street. Southward. 979 California avenue. Chicago avenue. Stave street. 400 California avenue. Twenty-fifth street. Southward. 979 California avenue. Chicago avenue. Stave street. 700 California avenue. Twenty-sixth street. Northward. 979 California avenue. Chicago avenue. Stave street. 700 California avenue. Twenty-sixth street. Northward. 979 California avenue. Corossing. Twenty-second street. 28 Central Park ave. Ohio street. Southward. 212 Church court. Morgan street. Southward. 212 Church court. Morgan street. Southward. 212 Chicago avenue. Western avenue. Rockwell street. 1330 Church court. Marian avenue.	Albany avenue	Crossing	Madison street	40	6
Alice place. Western avenue. Perry avenue. 1076 Allport street. Twenty-first street. Twenty-second street. 638 Armitage avenue, Milwaukee avenue Westward. 1800 Armitage avenue, Hoyne avenue. Eastward. 350 Armitage avenue, Hoyne avenue. Eastward. 350 Armitage avenue, Hoyne avenue. Eastward. 350 Ashland court. Ashland avenue. Eastward. 350 Augusta street. Lincoln street. 573 Augusta street. Lincoln street. Newton street. 259 †Avers avenue. Huron street. Chicago avenue. 670 Avers avenue. Indiana street. Kinzie street. 640 Basil street. Crossing. North avenue. 48 Bingham street Armitage avenue. Cornelia street. 1220 Blackhawk street. Noble street. Luce street. 620 Blanche street. Olickson street. Westward. 90 Blanche street. Dickson street. Westward. 90 Bloomingdale ave. Dickson street. Westward. 90 Boulevard way Twenty-fifth street. Boulevard. 394 Breslau street. Hamburg street. Ems street. 485 California avenue. Chicago avenue. Iowa street. 485 California avenue. Chicago avenue. 70 California avenue. Chicago avenue. 148 California avenue. Crossing. Western avenue. 48 California avenue. Chicago avenue. Iowa street. 485 California avenue. Fifteenth street. Northward. 979 California avenue. Chicago avenue. Iowa street. 500 California avenue. Fifteenth street. Ogden avenue. 9641 California avenue. Crossing. Twenty-sixth street. Northward. 148 California avenue. Fifteenth street. Ogden avenue. 9641 California avenue. Crossing. Twenty-sixth street. Northward. 148 California avenue. Twenty-sixth street. Northward. 148 California avenue. Twenty-sixth street. Northward. 148 California avenue. Crossing. Twenty-second street. 710 California avenue. Twenty-sixth street. Northward. 148 Chicago avenue. Western avenue. Rockwell street. 1380 Chicago avenue. Western avenue. Rockwell street. 1380 Chicago avenue. Western avenue. Lawndale avenue. 1000 Clifton Park ave. Union stre		Lake street	Fulton street	820	6
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Congress street California avenue Cicero court 1514 Congress Park pl. Congress street Northward 138					4

^{*} Laid at expense of property owners. † 200 feet of this laid at expense of property owners.

STREET.	FROM	то	Length of Pipe in feet,	Size in inches.
*Cortez street	Francisco street	Richmond street	335	6
Cortland street		Washtenaw avenue	2050	8
Cortland street		California avenue	100	8
Coulter street	. Crossing	Washtenaw avenue	25	6
Crawford street	. Madison street	Warren avenue	400	8
Cromwell street		Milwaukee avenue,	50	6
	. 280 feet E. of Leavitt street	Eastward	667	4
Dania avenue,		Northward	140	6
Dania avenue		Bloomingdale avenue.	1300	6
	. Bryson street	Southward	543	6
Division street		California avenue	2690	24
	Dania avenue	Westward	180	8
Division street *Division street		Westward	135	8
	. Richmond street California avenue	Westward	987 1230	8
	t Division street		854	6
	. Crossing.		62	6
	. Bloomingdale avenue.		622	6
	. Division street	Southward	357	6
	. Armitage	Asylum place	1309	6
Edbrooke place	. Perry avenue	Western avenue	1070	0
Eighteenth street.		Rockwell street	650	6
	Bauwans street		296	4
Elkgrove avenue.	. Hervey street	Northward	365	6
Elkgrove avenue,	. Clybourn place	Southward	327	6
	. Western avenue		730	6
	. Oakley avenue	Western avenue	448	6
Fairfield avenue		North avenue	2062	6
and the second s	Sixteenth street	Twenty-second street.	2671	6
Fifteenth street.	The state of the s		2704	16
*Fillmore street.		Francisco street	1716	6
Flournoy street	. Sacramento street	Albany avenue	550	8
	. Linwood street		910 104	e
Francisco street.	. Crossing	Boulevard	392	è
	. Twenty-fifth street Hoyne avenue		675	1
Frederick street.	. North avenue	Moffat street	1642	
	. Austin avenue	Kinzie street	300	8
	Leavitt avenue		629	
	. Rockwell street		133	
	. Leavitt street		1325	(
*Hamlin avenue.		Huron street	1314	8
Harrison street		Sacramento street	730	
*Harrison street.	. Kedzie avenue	Homan avenue	1009	8
	. Lincoln street		274	
	. North avenue		2652	
Hervey street	. Crossing	Wood street	12	4

^{*} Laid at expense of property owners.
† 885 feet of this laid at expense of property owners.

STREET.	FROM	то	Length of Pipe in feet.	Size in inches,
Hervey street	Dudley street	Robey street	377	6
Hinman street .	Throop street	Loomis street	641	6
*Hinman street	Hoyne avenue	Leavitt street	736	4
Hirsch street	Rockwell street	Washtenaw avenue	677	8
Hoffman avenue	Milwaukee avenue	Fullerton avenue	1674	6
Homan avenue	Twenty first street	Southward	342	8
*Homan avenue	Harrison street	Congress street	333	8
Homan avenue	Madison street	Washington street	598	8
Homer street	Washtenaw avenue	Western avenue	2000	6
Homer street	Leavitt street	Oakley avenue	347	6
Hoyne avenue	Crossing	Armitage avenue	25	6
*Hoyne avenue	Frankfort street	Asylum place	450	6
Hoyne avenue	Division street	Northward	112	8
Humboldt Bd., east side.	Crossing	North avenue	48	6
Humboldt Bd., west side	Crossing	North avenue	48	6
Humboldt street.	North avenue	Armitage avenue	2646	6
+Huron street	Hamlin avenue	Harding street	956	6
Huron street	Seymour street	Rockwell street	638	6
Huron street	Oakley avenue	Western avenue	688	6
Indiana street	Hamlin avenue	Tinkham street	1006	6
Jefferson court	Western avenue	Perry avenue	1067	6
Johnson avenue	California avenue	Westward	2088	6
Kedzie avenue	Fulton street	Northward	1000	12
*Kedzie avenue.	Harrison street	Congress street	292	12
Kedzie avenue	Crossing	Madison street	48	12
Laffin street	Thirteenth street	Fifteenth street	1232	6
Laffin street	Crossing	Twenty-first street	36	8
Lake street	Albany avenue	Eastward	900	6
Laughton street	Oakley avenue	Western avenue	350	6
‡Laughton street.	Washtenaw avenue	Eastward	350	6
Lawndale avenue	Chicago avenue	Glenview avenue	620	6
Leavitt street	Austin avenue	Ferdinand street	218	6
Leavitt street	Crossing	Twenty-second street.	41	8
Lexington street	Sacramento street	Albany avenue	644	6
Lexington street	Francisco street	Eastward	204	6
Lincoln street	Thirteenth street	Hastings street	373	6
Lincoln street	Taylor street	Northward	72	6
*Linwood street	Francisco street	Barclay street	330	6
Lunn court	Western avenue	Westward	535	6
McGovern street.	Milwaukee avenue	Westward	1274	6
Maplewood street.	North avenue	Bloomingdale avenue.	1300	6
Madison street	Crawford avenue	Homan avenue	2944	8
Marshfield avenue.	Taylor street	Northward	325	6
*Martin street	Washtenaw avenue	Eastward	300	6
Marvin street	Boulevard	Eastward.	120	6
THE RESERVE OF THE PARTY OF THE				6
The state of the s				12
Marvin street Milwaukee avenue	Washtenaw avenue Western avenue	Perry avenue	255 1400	- 3

^{*}Laid at expense of property owners.

† 200 feet of this laid at expense of property owners.

‡ 300 feet of this laid at expense of property owners.

STREET.	FROM	то	Length of Pipe in fect.	Size in inches.
Milwaukee avenue	Perry avenue	McGovern street	2359	8
Mitchell street	Crossing	North avenue	48	é
Moffat street	Western avenue	Maplewood avenue	940	6
Morgan place	Morgan street	Aberdeen street	726	4
Mozart street	North avenue	Armitage avenue	2646	ě
Myrtle street	Milwaukee avenue	Fullerton avenue	1476	8
Norman street	Crossing	North avenue	48	6
North avenue	California avenue	Simons avenue	2690	12
North avenue	Crossing	Rockwell street	50	8
Oakley avenue	Ambrose street	Moore street	372	6
Ogden avenue	California avenue	Westward	165	16
Ohio street	Desplaines street	Union street	390	6
Ohio street	Lawndale avenue	Central Park avenue	635	12
Olive street	Taylor street	Ashland avenue	390	4
Palmer avenue	California avenue	Westward	2202	6
Paulina street	Twelfth street	Fourteenth street	1285	6
Paulina street	Polk street	Southward	368	6
Paulina street	Twenty-second street.	Blue Island avenue	341	6
Peoria street	Washington street	Carroll avenue	1620	6
Perry avenue	Milwaukee avenue	Fullerton avenue	1994	8
Pleasant place	Western avenue	Perry avenue	1067	6
Polk street	Francisco street	Eastward	350	-
Powell avenue	Milwaukee avenue	Fullerton avenue	2464	0
Pratt street			62	6
*Prescott street	Sangamon street		1250	6
Prindeville street.	California avenue	Eastward	50	6
	Crossing	Milwaukee avenue	43	6
Rice place	Crossing	Twenty-second street.	372	6
Ridgeway street	Chicago avenue	Northward		6
Robey street	Indiana street	Emerson avenue	196 896	6
Robey street	Erie street	Chicago avenue		6
Robey street	Crossing	Webster avenue	25	8
*Robey street	Lubeck street	Asylum place	730	8
Rockwell street	North avenue	Armitage place	2600	8
	Crossing	North avenue	67	12
Rockwell street	Crossing	Armitage place	50	12
Rockwell street	Thomas street	Southward	140	12
Rockwell street	Division street	Northward	120	12
Rockwell street	Huron street	Superior street	324	6
Rockwell street	Hirsch street	Thompson street	733	12
	Crossing	Western avenue	65	6
	Congress street	Southward	180	8
	147 ft. N. of Twenty-fifth st	Northward	220	4
Sacramento street	Crossing	Madison street	40	8
Sangamon street.	Milwaukee avenue	Pratt street	490	0
	Lincoln street	Robey street	710	6
	Washtenaw avenue	Rockwell street	641	6
Seymour street	North avenue.,	Armitage avenue	2675	8

^{*}Laid at expense of property owners.

STREET.	FROM	то	Length of Pipe in feet	Size in inches.
Seymour street	Grand avenue	Ohio street	295	6
Sibley street	Harrison street	Southward	330	6
Simons avenue	Crossing	North avenue	95	8
Sixteenth street	Western avenue	Westward	306	6
+Sixteenth street	Fairfield avenue	Eastward	1386	6
*Spaulding avenue	Congress street	Tremont street	370	6
Spaulding avenue.	Crossing	Madison street	52	8
	Twenty-first street		465	6
	Indiana street		325	8
Station street	Leavitt street		410	6
Stave street	California avenue	Eastward	260	6
St. Louis avenue	Twenty-second street		522	8
St. Louis avenue	Twenty-second street		195	8
Superior street	Crossing	Sangamon street	96	6
Taylor street	Western avenue	Rockwell street Marshfield avenue	1346	6
	Ashland avenue		308 289	8
Taylor street	Myrtle street California avenue	Cypress street Rockwell street	1383	8
	Indiana street	Ohio street	676	8
	Spaulding avenue	Homan avenue	625	6
	Fillmore street	Twelfth street	620	6
	Twenty-first street	Northward	506	6
	Fairfield avenue	California avenue	296	8
	California avenue	Westward	650	8
	St. Louis avenue	Millard avenue	650	6
	Bonney avenue	Mowry avenue	350	6
	Western avenue	Oakley avenue	650	8
	Leavitt street	Eastward	515	8
Twenty-third st	Central Park avenue	Clifton Park avenue	331	6
Twenty-fifth street	Sacramento street	Whipple street	333	6
Twenty-fifth street	California avenue	Washtenaw avenue	673	6
Twenty-fifth court	164 ft. W. of California ave	Sacramento street	1156	6
Twenty-sixth st	Western avenue	California avenue	2820	16
Upton street		Rosebud street	234	6
Upton street		Western avenue	43	6
*Utica street	Fillmore street	Twelfth street	620	6
Van Horn street	Washtenaw avenue	Eastward	369	4
	Crossing	California avenue	37	8
Walnut street	Albany avenue	Eastward	698	6
Walnut street	Francisco street,	Eastward	300	6
Warren avenue		Eastward	1223	6
Warren avenue		Homan avenue	14	6 8
	Armitage avenue	North avenue	2676	8
	Laughton street	Coulter street	665 1673	8
		Van Horn street	3732	12
	Hirsch street Laughton street	Milwaukee avenue Twenty-sixth street	1333	16
Ty Caterin avenue.	Laughton street	I wenty sixth street	1000	10

^{†336} feet of this laid at expense of property owners.
*Laid at expense of property owners.
‡1250 feet of this laid at expense of property owners,

STREET.	FROM	то	Length of Pipe in feet	Sire in inches.
Western avenue Whipple street Wilmot avenue Winchester avenue Wood street Wood street Wright street York street		Milwaukee avenue Northward Westward Taylor street Thirteenth street R. R. Tracks Newberry avenue Marshfield avenue	2678 201 1011 436 71 70 680 775 72 566 68	168 866 668 888 6666
	Add branch pipe for hy Add branch pipe for hy	ydrantsydrants	1052 4925	4 6

RECAPITULATION OF PIPE LAID DURING 1887, INCLUDING HYDRANT BRANCHES.

Total Length of Pipe in Feet.	11,045 36,307 186,663	234,014	441694
Diameter in Inches.	36 36	36	36
Length of Pipe in Feet.	106	106	106
Diameter in Inches.	2 2 2	25	24
Length of Pipe in Feet.	0 0 0 3,690	2,690	000
Diameter in Inches.	16 16 16	16	16
Length of Pipe in Feet.	236 210 16,510	16,956	31118
Diameter in Inches.	81 81 81	12	12
Length of Pipe in Feet.	1,020	15,558	0.0 0.00 0.00 0.00 0.00 0.00
Diameter in Inches.	x x x	00	00
Length of Pipe in Feet.	8,334 48,442	59,388	111393
Diameter in Inches.	0 0 0	9	9
Length of Pipe in Feet.	7,830 24,975 96,868	129,673	245263
Diameter in Inches.	4 4 4	4	4
Length of Pipe in Feet.	266 1,768 7,619	9,653	143Z3
DIVISION.	North	Total in Feet.	Total in Miles

RECAPITULATION OF HYDRANT BRANCHES LAID DURING 1887.

Division.	Length of Pipe in Feet.	Diameter in Inches.	Length of Pipe in Feet.	Diameter in Inches.	Total length of Pipe in Feet.
North	92	4	465	6	557
South.	619	4	656	6	1,275
West	1,052	4	4,925	6	5,977
Total in Feet	1,763	4	6,046	6	7,809

PIPE TAKEN UP OR ABANDONED DURING 1887.

The following statement shows in detail the location and size of pipe taken up or abandoned during 1887, and that substituted therefor:

			TAKEN U		SUBSTITUTED.	
STREET.	FROM	то	Length in Feet.	Size in Inches.	Length in Feet.	Size in Inches.
Egan ave	Michigan ave	Prairie ave	{ 400 300	4 6	750	8
Green st. Hammond st. Hirsch st. †Napoleon pl. North ave. *Ohio st. Peoria st. Pratt st. Quincy st. Rees st. Rockwell st. Sangamon st. *Sedgwick st. †Stewart ave. †Thirtieth st. †Twenty-eighth. †Twenty-ninth. *Wabash ave. Western ave.	Milwaukee ave Chicago ave Thirtieth st Twenty-ninth st. Crossing Crossing Crossing	Kinzie st Wisconsin st. Westward Stewart ave. Rockwell st Union st. Carroll ave. Sangamon st. Eastward Clybourn ave. North ave Pratt st. Oak st. Southward Swift pl Stewart ave. Stewart ave. Twelfth st. Northward.	350 600 677 70 50 390 1,620 22 187 1,215 33 490 1,275 130 280 80 80 80 (1850 1650 300	4 4 6 6 6 4 4 4 4 6 6 6 6 6 6 6 6 6 6 6	300 600 677 70 50 390 1,620 62 	8 6 8 6 6 6 6 6 6 6 6 6 6
TOTAL			11,129		13,274	

^{*} Abandoned.

[†] New pipe laid on opposite side of street from that taken up.

RECAPITULATION OF PIPE TAKEN UP OR ABANDONED DURING 1887.

8,512	teet	ot	4-ınch	pipe
2,127	feet	of	6-inch	pipe
280	feet	of	8-inch	pipe.
210	feet	of	16-inch	pipe.

TABLE SHOWING AMOUNT OF PIPE IN USE IN THE CITY AT THE CLOSE OF 1887.

	1886.		1887	'.	
Diameter of Pipe.	Amount in Use in Feet.	Amount Laid in Feet.	Amount Taken up or Abandoned in Feet.	Grand Total in Feet in Use at the end of 1887.	Grand Total in Miles.
36	46,664	106		46,770	84538
80	39	 	. 	89	0,330
28	160			160	0.1550
24	94,483	2,690		97,178	182128
16	82,410	16,956	210	99,156	184118
12	181,696	15,553		197,249	371928
10	8,012	<u> </u>	.	8,012	1878
8	640,002	59,383	280	699,105	1822148
6	1,384,562	129,678	2,127	1,462,108	2764938
4	744,92 8	9,658	8,512	746,069	1411588
8	14,087	 		14,037	28477
Total in Feet,	8,146,998	234,014	11,129	3,369,878	
Total in Miles	598,118	441588	2 5 6 6 6	6381238	6381338

Net increase for 1887, 42118 miles of pipe.

The following table shows the number, size and location of stop valves put in during the year, the number and size of those previously put in, and the number and size of all in use by the city at the end of 1887.

NORTH DIVISION.

LINE OF PIPE.	LOCATION.	SIZE OF VALVES.							
		4"	6"	8"	12"	16"	24"	36'	
Blackhawk street. Clyde street. Fullerton av Jay street Jay street Ontario st Sedgwick st.*. Uhland st	West line Cleveland avenue South line Centre street West line Sheffield avenue South line Fullerton avenue. North line Belden avenue 29 ft. west of Statest. (blow-off) North line Chicago avenue North line Rees street		1 1 1 1 1 1	1					
Tota Prev	l in North Division	1 178	6 345	1 262	32	12	12	3	
Less by val	otal ves taken out and replaced by of different size	1	351	263	32	12	12	3	
G	and total in North Division	178	351	263	32	12	12	3	

^{*}In place of 4-inch.

SOUTH DIVISION.

LINE OF	LOCATION.	1.0	5	SIZE C	F VA	LVES		
PIPE.	DOCATION.	4"	6"	8"	12"	16"	24"	36'
Archer av.	South line Thirty-third street .		1	2000			1223	100
Archer av.	West line Saratoga street	10.1	1	1000	200			
Ashland av.	North line Egan avenue		1	11.00				
	North line Douglas avenue		1	0				
	North line Egan avenue		1					
	South line Archer avenue		1					
	South line Thirty-third street .	4.4	1					
	South line Thirty-third strect.		1		Lance Street		(B) (C) (C) (C)	
	At intersection of Adams st. for fire cistern		1		100			
	East line Dashiel street		1					
	West line Hanover street		1					
	East line Michigan avenue			1				
	East line State street			1				
	West line Wentworth avenue			1				
	West line Butterfield street			1				
	West line Ashland avenue		1					
	North line Thirty-seventh st		1					
	North line Egan avenue		1		1			
	North line Douglas avenue		1					
Hoyne av	North line Douglas avenue			1				
	South line Thirty-third street .			1				
	East line State street			1				
	Intersection of State street, for fire cistern.		1					
Lake street.	11 La Salla street 11		1					
Lake street.			1					
Lake street	" Michigan av. "		1					
LaSalle st	North line Egan avenue	1						
	South line Thirty-fifth street		1					
	South line Thirty-third street		1					
Parnell av	North line Egan avenue		1					
	North line Douglas avenue		1					
	North line Douglas avenue		1					
Prairie av	North line Egan avenue		1					
	North line Thirty-seventh st			1				
Stanton av	North line Egan avenue		1					
Thirty-second st.	West line Wallace street		1					
Thirty-third et	East and west lines Wood st		2					
Thirty-fourth st.	East line Wood street			1				
	West line Stewart avenue		1					
Vernon av	North line Egan avenue	***	1					
	South line Harrison street		2				1	
Wahash av	South line Peck court	in a	2					1230

^{*} In place of 4-inch.

ENGINEER'S REPORT.

SOUTH DIVISION.—CONTINUED.

LINE OF	LOCATION.	SIZE OF VALVES.							
PIPE.	300	4''	6''	8"	12"	16"	24"	36"	
*Wabash av. Wallace Wentworth av Second alley n. of	North line Twelfth street South line Harmon court South line Thirty-third street North line Egan avenue East line Cottage Grove avenue		1						
Total in Prev	South Divisioniously put in	2 150	40 469	10 557	64 64	0 17	1 14	0	
Less by va	otal	152 5	509	567	65	17	15	4	
G	rand Total in South Division	147	509	567	65	17	15	4	

^{*}In place of 4-inch.

WEST DIVISION.

LINE OF	LOCATION.		S	IZE (OF VA	LVES	-	
PIPE.	LOCATION.	4"	6"	8"	12"	16"	24"	36'
-				-			-	
Albany ave	North line Madison street		1					
Albany ave	North line Lake street		1					
Albany ave	South line Fulton street		1					
Alice place.	West line Western avenue East line Perry avenue		1					
Alice place.	East line Perry avenue		1					
Allport st	North line Twenty-second st		1					
Armitage av	West line Rockwell street E. and W. lines Milwaukee ave.			****	1			
Armitage av	E. and W. lines Milwaukee ave.			****	2	****		
Armitage av	E. and W. lines California ave. South line Thirteenth street South line Fifteenth street. South line Twenty first street.			***	2			
Ashiand ave	South line I hirteenin street		1	****		***	****	
Ashland ave	South line Titleenth Street.				****		****	
Ashland ave	Fast line Ashland avenue	****	****			***	****	
Augusta at	East line Ashland avenue West line Lincoln street		1					
Avers ave	South line Chicago avenue	0.50	î					
Barclay st	South line Chicago avenue North line Augusta street		î					
Basil st.	North line North avenue		1					
Bingham st.	North line Armitage avenue							-
California av	North line Lake street			1				
California av	South line Division street			1		1		-
California av	East line Western avenue North line Lake street South line Division street North line Division street N line Division st (Blow off)			1		1		
California av	North line Division st. (Blow off). North line North avenue S. line North ave. (Blow off) North line Bloomingdale ave South line Armitage avenue South line Milwaukee avenue.		1					
California av	North line North avenue			1		1		
California av	S. line North ave. (Blow off)		1	***	· · · ·			
California av	North line Bloomingdale ave			1				
California av	South line Armitage avenue			1				
California av	South line Milwaukee avenue.			***	1			
Camoing av	South line I wenty second st.							
California av	N. and S. lines Twenty-sixth st.			2				
Cattol Book	South line Orden avenue		1.19	1	***			
Central Park ave.	North line Obio street	234	1	****		4		
Chicago ave.	West line Hamlin avenue	****	1	**		***		
Chicago ave.	No. line Twenty-sixth st. (feeder) South line Ogden avenue North line Ohio street West line Hamlin avenue West line Western avenue	***						
Churchet	West line Morgan street South line Taylor street South line Ogden avenue South line Madison street. East line California avenue	1		****				
Claremont avenue	South line Taylor street		9		0000		0000	
Clifton Park ave.	South line Ogden avenue		i					
Colorado av.	South line Madison street	100		1			1000	
Congress st.	East line California avenue		1					
Congress st.	East line Homan avenue		1					
Congress st.	West line Rockwell street		1					
Congress st.	East line California avenue East line Homan avenue West line Rockwell street West line Sacramento street		1					
PARTICIPATION OF	E, and II. Hiles California ave.	* * * *	* * 2 *	3				
Cortland st	California avenue (feeder)							
	E. and W. lines Rockwell st					V-2000		
Cortland st	West line Western avenue			ĩ				
Crawford av.	North line Madison street			1				
Cromwell st.	North line Milwaukee avenue.		1					

LINE OF			S	IZE C	OF V	LVES	3.	
PIPE.	LOCATION.	4"	6"	8"	12"	16"	24"	36"
		_	_					
et and a	West Car II	4						
Crystal st .	West line Hoyne avenue	4	444.4	***	* * -	****	****	***
Dania ave	North line North avenue		+			****	****	****
Dania ave	North line Division street	7.4.4.4	1	2127		****	****	****
Division st	North line Division street East line California avenue E. and W. lines Rockwell st			1		****		
Division st.	E. and W. lines Rockwell St			2		***	***	
Division st.	West line Western avenue							
Dudley st	North line Chicago avenue	100						
Dudley st	South line Division street	****	1					
Dudley st	South line Webster avenue North line line Wabansia ave		1					
			1	12000				
	South line Division street		I			100000		
	East line Perry avenue		1				****	
	West line Western avenue		1					
Elkgrove av.	South line Clybourn place		1					
Ems street.	West line Oakley avenue	2000				N. C.	****	
Ems street.	East line Western avenue		1					
	West line Oakley avenue		1	***		100		
	North line Bloomingdale ave			***				
	North line North avenue		2					
	South line Sixteenth street							
	South line Nineteenth street		1					
	South line Twenty-first street		1		***			
	Washtenaw avenue (feeder)		1.00	1				
Flournoy st.	West line Sacramento street		1	****			nate	
Francisco st.	North line Augusta street			1			***	
	N. and S. lines Madison street.		2				****	
Frankfort st.	West line Robey street	224	1				888	
	North line Bloomingdale ave.							
	North line North avenue						****	
	East line Leavitt street						1.50	
	E. and W. lines Rockwell st .						***	
	West line Hoyne avenue					1000		
	East line Leavitt street			1000				
Hamburg st.	West line Robey street		1	12		1000		
Hamlin ave.	North line Indiana street	2424		1				
	North line Ohio street			1				
	East line Homan avenue			1				
Heine street	South line Armitage avenue			1				
Heine street	North line Bloomingdale ave	* * *		1			***	
Heine street	North line North avenue	***		1				
	West line Leavitt street			1000				
"Hirsch st	West line Rockwell street	***	1	1		****		
Hollman av.	South line Fullerton avenue		1					
	North line Milwaukee avenue.							
Homan ave.	North line Madison street		V	1				
Homan ave.	South line Washington street			1		La contract		
Homan ave.	South line Twenty-first			1				4.4
Homer st	E. and W. lines Rockwell st		2				****	
	The second secon		1	1.				

^{*}In place of 6 inch.

LINE OF	Ton May		S	IZE (of V	LVES	i.	011
PIPE.	LOCATION.	4"	8"	8"	12"	16"	24"	36"
				_				

	West line Western avenue		1	****			27.50	
	South line Armitage avenue		1				100	****
	North line Division street	****		1				
	North line Frankfort street		1					****
	South line Armitage avenue		1	***				****
Hamboldt street.	North line Bloomingdale ave		1		5000		****	1000
	North line North avenue North line North avenue		2					1111
	West line Hamlin avenue		1				1000	1000
	West line Oakley avenue		1				1000	2000
Huron st	West line Western avenue		1			****		100
Lefferson of	East line Perry avenue		1				****	1000
	West line Western avenue		1				****	
	West line California avenue		1					
	West line Thomas street		î				100	***
	North line Fulton street				i			0000
	North line Harrison street				10001		0.10	****
	North line Madison street				î	***		
	South line Thirteenth street		1	3.4			1000	****
	South line Fourteenth street		1	7 7 7 7			0000	0000
	South line Fifteenth street		Î					
	AND THE RESERVE OF THE PARTY OF		î		0000		1000	
	Western avenue (feeder)	****		1		****		
	Western avenue (blow-off)		1	100		155		
	North line Chicago avenue		î			***		0000
	West line Sacramento street	2.7.2.0	Î	1330				
	South line Taylor street		1		1777			
	South line Thirteenth street	****	1	0000	LA	17 - 11	27	
			1		1000	0000		2000
Linwood st.	West line Francisco street		1					0000
Loomis st	South line Thirteenth street	1930		1	1000	0000	300	0000
	South line Fifteenth street			î			10.00	
	West line Western avenue		1 3		0000			
	West line Milwaukee avenue		1				100	
				1				
Madison st	West line Central Park avenue			1				
Maplewood ave	North line North avenue		1					
Millard ave.	South line Ogden avenue			1				
Mitchell st.	North line North avenue			1				
Milwankee ave	North line Armitage avenue		100.2		1			
Milwaukee ave	East line California avenue West line Perry avenue West line Western avenue			1				
Milwankee ave	West line Perry avenue			1				
Moffat st	West line Western avenue		1					
Morgan pl	West line Morgan street	1						
Mozart st	South line Armitage avenue		1					
Mozart st	North line Bloomingdale ave		1					
Mozart st	North line North avenue		1					
Myrtle st	South line Fullerton avenue			1				
Myrtle st	West line Western avenue West line Morgan street South line Armitage avenue North line Bloomingdale ave North line North avenue South line Fullerton avenue North line Milwaukee avenue.			1				
					1		1	
_		-	1				· ·	-

LINE OF	LOCATION.		S	IZE (OF VA	LVES	š.	
PIPE.	DOCATION.	4"	6"	8"	12"	16"	24"	36
Norman ave.	North line North avenue		1					
North ave	E. and W. lines California ave.				2			
North ave	West line Humboldt street.				ĩ		2000	
North ave.	E. and W. lines California ave. West line Humboldt street East line Rockwell street	****		1	100			
akley ave.	South line Twenty-first street, at California ave. (feeder) at California ave. (blew-off)	****	1					
oden ave.	at California ave. (feeder)	1	350	1	1	0000		
oden ave	at California ave. (blew-off)		1		2000	10.7	1000	
oden ave.	West line California avenue		100			1	2000	10
Ohiost	West line Desplaines street		1	1250		1		
Hive et	South line Laylor street			The same		a and		
almer ave	West line California avenue		1	0000	1	1000	3000	00
almer ave	West line California avenue West line Thomas street South line Armitage avenue		1					
aulina st	South line Armitage avenue		î	0.000		2000		00
aulina st	South line Polk street		1			7000		100
	South line Twelfth street							
	South line Fourteenth street							
aulina st	South line Twenty-first street.	1000	i					
aulina st	South line Twenty-second st.	***	i					
Peoria st	North line Fulton street	100	î					
Peoria st	North line Randolph street							
erry ave	South line Edbrook place			1				
erry ave	South line Fullerton avenue			1	****			**
Perry ave	South line Fullerton avenue North line Milwaukee avenue.	****		1				* *
Pleasant nl.	East line Perry avenue	***	1	1		****	****	
Pleasant pl	West line Western avenue		Î					1
	South line Edbrook place							
Powell ave	South line Fullerton avenue		Î					00
	North line Milwaukee avenue.		i					00
Prescott st	East line California avenue		1		***			00
rindeville et	South line Milwankee avenue		1					1
Ridgeway st	North line Chicago avenue		1					
Cohev st	South line Milwaukee avenue. North line Chicago avenue. North line Frankfort street	*		1				30
Robey st	South line Twenty-first street.	****	1	1				1
Rockwellst	South line Armitage avenue		1		1		****	
Rockwellst	North line Bloomingdale ave		1000	1				
Rockwell st	North line Bloomingdale ave N. and S. lines Division st			3	2			
Rosebud st	East line Western avenue		1					10
acramento st	North line Madison street			1		****	****	150
evmour st	South line Armitage avenue.	****		i	3333		****	100
evmour st.	North line Western avenue North line Madison street South line Armitage avenue North line Bloomingdale ave North line North avenue North line North avenue South line Harrison street			1			1000	
evmour st.	North line North avenue		1	1	1000	2000	1	-
imons ave	North line North avenue		17.1	1				1
iblev st.	South line Harrison street		1	1		100		
sixteenth st.	West line Rockwell street West line Western avenue		1					1
sixteenth st	West line Washtenaw avenue.		1					
pringfield are	North line Indiana street		1	1		****		1
Lamburg u.c	and the state of t					* * * * 4	4 4 4 4	100

^{*}In place of 4-inch.

LINE OF	LOCATION.		5	IZE (OF V	LVES	š.	
PIPE.	LOCATION,	4"	6"	8"	12"	16"	24"	36'
St. Louis ave.	South line Twenty-second st .			1				
Station st	West line Leavitt street		1	-				
Stave street.	FI . IF CO INC .							
Superior st.	West line Western avenue							
Taylor st	West line Ashland avenue.							100
Thomas st	E, and W. line Rockwell st							100
Thomas st	East line California avenue		1				***	
Tinkham st.								
	West line California avenue							
	East line Western avenue			î				
Twenty-fifth st.	***							
Twenty-sixth st.	*** ** ** ***					1		
Twenty-sixth st-				1				
I wenty-sixth st.	***					1		
Prenty-sixth st.	W line Western ave (feeder)			1		_		***
Cwenty winth at	W. line Western ave. (feeder). W. line Western av. (blow-off)		1					
			i					
Upton st	West line California avenue			1				
	West line Sacramento street.							
					274	C		
	East line Crawford avenue			····				
	South line Armitage avenue North line Bloomingdale ave			1			***	
	North line North avenue							
Washtenaw ave	South line () aden avenue			1				
Washtenaw ave	South line Cigteenth street			1				
Wastern or	South line Ogden avenue South line Sixteenth street North line Laughton street	***		-		1		
Wastern av.	North line Laughton street S. line Fifteenth st. (blow-off)		1			-		
western av	S. line Fifteenth st. (feeder)							
Wastern av	S. line Sixteenth st. (blow off)		1					
Western av	North line Sixteenth st. (blow on)							
Western av	North line Sixteenth street,			1				
Western av	Van Horn street (feeder)					1	****	
Western av	North line Twenty-first street. North line Bloomingdale ave				i			***
							****	***
	North line Milwaukee avenue.			100	i			
	South line Milwaukee avenue.		1200		2			
	N. and S. lines North avenue.							7.53
	West line Hoyne avenue				****		***	
wood street.	South line Twenty-first street.			1			1 7.5	
Total in W	est Division	6	136	79	22	11	1	
	put in	12 4 20	985	644	104	39	21	
- icitousty	haraminin			-			-	
Total		521	1121	723	126	50	22	
	lves taken out and replaced)	This				00	-	-
	different sizes	6	1					
J Dillers Of	mucreme stees, ,)						-	-
	total West Division		1120	min m	126	50	22	-

^{*}In place of 4-inch.

RECAPITULATION OF STOP VALVES PUT IN DURING 1887.

DIVISION.	SIZE OF VALVES.								
	4''	6''	8''	12''	16''	24''	36''	TOTAL	
North	1	6	1	0	0	0	0	8	
South	2	40	10	1	0	1	0	54	
West	6	136	79	22	11	1	0	255	
Total	9	182	90	23	11	2	0	817	
Number put in	duri	ng 18	387.					317	
Number replac	ed d	uring	1887	7	· • • •		• • •	13	
Net increa	se d	uring	1887	7				304	

NUMBER AND SIZE OF VALVES IN USE BY THE CITY AT THE END OF 1887.

DIVISION,	SIZE OF VALVES.							
	4''	6''	8''	12''	16''	24''	36′′	TOTAL
North	178	851	263	82	12	12	3	851
South	147	509	567	65	17	15	4	1324
West	515	1120	723	126	50	22	5	2561
Total	840	1980	1553	228	79	49	12	4736

The following statement shows in detail the number, size and location of the hydrants added to the system during the year, and the number in use at the end of 1887:

NORTH DIVISION.

		SIZE	FHYD	R'NT
LOCATION.	STREET.	Single.	2%-inch Double.	4-inch Double.
West side	Burling st., bet. Centre st. and Garfield ave	1		
West side	Burling st., bet. Webster ave. and Garfield ave.			
*West side	Cleveland ave., bet, Hubbard pl. and Blackhawk at.		1	
*S. W. cor	Cleveland ave., and Hubbard pl			
*N.W. cor	Cleveland ave. and Blackhawk st			
West side	Clyde st., 300 ft. N. of Centre st		1	
N.W. cor	Elk st. and Bauwans st.	1		
S.W. cor	Hammond st. and Wisconsin st		1	
West side	Hammond st., 300 ft. S. of Wisconsin st	1		
S.W. cor	Herndon st. and Belden ave		1	
West side	Herndon st., 300 ft. N. of Webster ave		1	
North side	Illinois st., E. of Seneca st. (end of pipe)		1	
North side	Illinois st., 400 ft. E. of Seneca st		1	
North side	Illinois st., 680 ft. E. of Seneca st		1	
North side	Illinois st., 900 ft. E. of Seneca st		1	
S. W. cor	Jay st. and Fullerton ave			
N.W. cor West side	Jay st. and Belden ave		1	
N.W. cor	Jay st., bet. Belden ave. and Fullerton ave Larrabee st. and Hobbie st			
N.W. cor	Larrabee st. and Oak st		1	
.W. cor	Larrabee st. and Division st		1	
N. E. cor	Langdon st. and Uhland st	1		
N. W. cor	Locust st. and Sedgwick st	1	1	
S.W. cor	Market st. and North ave		î	
West side	Market st., bet. Schiller st. and North ave		î	
V. W. cor	Mohawk st. and Clybourn ave			1
West side	Mohawk st., 300 ft. S. of North ave		1	
North side	Ontario st., 320 ft. E. of St. Clair st		1	
North side	Ontario st., 600 ft. E. of St. Clair st		1	
N. E. cor	Rees st. and Uhland st		1	
North side	Rees st., 425 ft. E. of Halsted.		1	
N. E. cor	Sedgwick st and Hill st		1	
N. W. cor	Sedgwick st. and Hobbie st		1	
S. W. cor	Sedgwick st. and Division st		1	
S.W. cor	Sedgwick st. and Oak st		1	
V. W. cor	Sedgwick st. and Chicago ave		1	
West side	Sedgwick st., 263 ft. S. of Locust st		1	
West side	Sedgwick st., bet. Locust and Oak st		1	

^{*} In place of single.

ENGINEER'S REPORT.

NORTH DIVISION.—CONTINUED.

		SIZE O	F HYD	R'NTS.
LOCATION.	STREET.	Single.	21/4-inch Double,	4-inch Double.
*West side East side North side	Sedgwick st., 264 ft. N. of Chicago avenue Uhland st., at north end of pipe	 1 1		
	Total in North Division	7	34	
	Previously put in	437	324	129
	Total	444	358	129
	Less by hydrants taken out and replaced \{\) by others of different size	16		
	Total in use in North Division	428	1 7 34 87 324 84 358	129

^{*} In place of single.

SOUTH DIVISION.

		SIZEO	P HYD	R'NT
LOCATION.	STREET.	Single	24-inch Double.	· 4-inch
15				
South side	Adams st., 156 ft. W. of Clark st			1
North side	Adams st., 181 ft. W. of Fifth ave		10.0	î
S. W. cor	Archer ave. and Champlain st		1	
S. E. cor	Archer ave. and Thirty-fourth st		1	
S. E. cor	Archer ave. and Long John st		1	
S. W. cor	Calumet ave. and Thirty-seventh st		1	
S. W. cor	Champlain st. and Thirty-third st		1	
	Champlain st., 300 ft. S. of Thirty-third st	1	****	
N. W. cor			1	
N. W. cor	Champlain st. and Thirty sixth st		1	
West side	Charlton st., 300 ft S. of Thirty-third st	1		
N. W. cor	Charlton st. and Thirty fourth st		1	
N. W. cor.	Charlton st. and Douglas ave		1	
West side	Dashiel st., bet. Twenty-sixth and Twenty-seventh		1	
West side	Dashiel st., bet. Twenty-eighth and Twenty-ninth		1	
West side	Dashiel st., bet. Twenty-ninth and Thirtieth sts Dashiel st., bet. Thirtieth and Thirty-first sts	1		
Vest side	Douglas ave. and Stewart ave	1		***
W COT	Douglas ave. and Portland ave		*	
	Douglas ave. and Shields ave.		1	
	Douglas ave. and Hanover st		1	4.
V W cor	Douglas ave. and Long John st	* * * *	1	
North side	Douglas ave., 300 ft. W. of Lincoln st	1		
North side	Douglas ave., 300 ft. E. of Iron st		1	100
	Douglas ave. and Iron st		î	
	Eda st. and Indiana ave		1	
South side	Eda st., bet. State and Wabash ave.	1		00.
	Egan ave., 140 ft. W. of Cottage Grove ave		1	1
North side	Egan ave., 275 ft. E. of Langley ave		1	
	Egan ave. and Clark st		1	
V. E. cor	Egan ave. and Clark st		1	
V. W. cor	Egan ave. and Michigan ave	1		
	Egan ave. and Vernon ave		1	
	Egan ave., 278 ft. W. of Ashland ave		- + 4.0	
	Fifth ave., 300 ft. N. of Thirty-seventh st			
West side				
North side				
	Groveland Park, 409 ft. E. of Cottage Grove ave.	1		
. W. cor	Hoyne ave. and Thirty third st		1	
V. W. cor		1		
	Hoyne ave., 250 ft. S. of Thirty-fourth st	1		
West side	Hoyne ave., 300 ft. S. of Thirty third st	1		
Cast side	Indiana ave., 313 ft. S. of Twenty-fifth st		1	
	Indiana ave., 300 ft. S. of Twenty fourth st		1	
E. Cor	Indiana ave. and Douglas ave		1	

		SIZE	FHYD	R'N
LOCATION.	STREET.	Single.	2½-inch Double.	4-inch
Zant nida	Indiana ave., 300 ft. N. of Egan ave	1	13	
	James ave., 330 ft. E. of Laurel st			
	Jasper st. and Douglas ave			
V. W. COT	Laffin st. and Douglas ave		1	
	La Salle st., 300 ft. S. of Thirty eighth st		1	**
	La Salle st., 303 ft. S. of Thirty-first st.		****	*
	La Salle st., 326 ft. N. of Thirty-seventh st			
Vest side	La Salle st., 300 ft. S. of Thirty-seventh st			
Vest side				
	La Salle st., 300 ft. N. of Thirty-third st La Salle st., 300 ft. S. of Douglas ave			
Vest side	La Salle st., 600 ft. S. of Douglas ave	1		
	Lowe ave., 300 ft. S. of Thirty second st			
W. cor	Lowe ave. and Thirty-third st		1	
. W. cor			1	
E. cor	Lundy st. and Thirty-seventh st Lundy st. and Thirty-third st			7.5
. W. cor	Lundy St. and I hirty-third St		1	6 :
. W. cor	Lundy st. and Thirty-fourth st		****	2.5
Vest side .	Lundy st., 300 ft. S. of Thirty-third st	1		
Vest side	Parnell ave., 300 ft. N. of Egan ave	1		
Vest side	Prairie ave., 300 ft. N. of Egan ave			
V. W. cor	Robey st. and Thirty-sixth st		1	
V. W. cor	Robey st. and Thirty-seventh st			
	Robey st. and Thirty-eighth st		1	
Vest side	Robey st., 300 ft. S. of Thirty-sixth st.	1 1		
	Robey st., 300 ft. S. of Thirty-seventh st			
E. cor	Thirtieth st. and Indiana ave		1	
E. cor	Thirty-first st. and Stewart ave	1		4.4
	Thirty-third st. and Fox st		1	*
orth side	Thirty-third st. and Charlton st	1	1	
outh side	Thirty-third st., 300 ft. W. of Ullman st Thirty-third st., 300 ft. W. of Auburn st	1	****	
orth side	Thirty-third ct., 300 ft. W. of Paulina st			
orth side	Thirty-third ct., 227 ft. W. of Wood st			
. W. cor	Thirty-fourth st. and Indiana ave	1		
. W. cor				
E. cor	Thirty-sixth st. and Indiana ave		1	
. W. cor	Thirty seventh pl. and Indiana ave		i	
. E. cor			1	
	Thirty-eighth st. and Indiana ave		1	
	Twenty-fourth pl. and Stewart ave		1	
J E cor	Twenty-sixth st. and Stewart ave	1		
J. W. cor	Twenty-eighth st. and Stewart ave	4	1	* *
	Twenty-eighth st. and Stewart ave			
V. E. cor		1		**
	Vernon ave., 300 ft. S. of Thirty-seventh st	1	-	
rest side	vernon ave., out it. S. of Imity-seventh st	1		

^{*}In place of single.

DEPARTMENT OF PUBLIC WORKS.

SOUTH DIVISION.—CONTINUED.

		SIZE	F HYD	R'NTS.
LOCATION.	STREET.	Single	2%-inch Double.	4-inch Double
S. W. cor	Wabash ave., 800 ft. N. of Twelfth st	1		1.50
First alle	y N. of Douglas ave. E. of Cottage Grove ave	1		
Total in S Previousl	South Division	47 679	46 651	2 188
Less by h	l ydrants taken out and replaced by others of differ- e		697	190
Tota	l in use in South Division	725	697	190

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WEST DIVISION.

		SIZEO	F HVD	R'NT
LOCATION.	STREET.	Single.	2%-inch Double.	4-inch
North side	Alice pl., bet. Powell and Perry aves		1	
West side	Allport st., 300 ft. N. of Twenty-second st		1	
N. W. cor	Armitage ave. and California ave			1
5. E. cor	Armitage ave. and Hoyne ave			
N. E. cor	Armitage ave. and Point st		1	
North side	Armitage ave., 80 ft. W. of Rockwell st		1	
North side	Armitage ave., 98 ft. W. of Seymour st		1	
North side	Armitage ave., 457 ft. W. of Seymour st		1	
West side	Avers ave., 300 ft. S. of Indiana st		1	
N. W. cor	Avers ave. and Kinzie st			
S. W. cor	Avers ave. and Chicago ave		1	
N. W. cor.	Avers ave. and Huron st	****	1	
North side	Barber st., 360 ft. W. of Jefferson st	1		***
North side	Barber st., 255 ft. W. of Canal st	1		
N. W. cor	Barclay st. and Augusta st	1	1	
N. W. cor	Barclay st. and Linwood st		1	
outh side	Bingham st., 300 ft. N. of Armitage ave			00.
South side	Bingham st., 600 ft. N. of Armitage ave			
South side	Bingham st., 900 ft. N. of Armitage ave		î	
. W. cor	Blanche st. and Noble st	1		
West side	Boulevard way, 369 ft. N. of Twenty-fifth st	1		
S. W. cor	California ave. and Iowa st			
V. W. cor	California ave. and Walnut st			
N. W. cor	California ave. and Cortland st			1
S. W. cor	California ave. and Palmer ave		1	
S. W. cor	California ave. and Johnson ave		1	
East side	California ave., bet. Armitage ave. and Cortland st.		1	
N. W. cor	California ave. and North ave		1	
East side	California ave., bet. North and Wabansia aves			
East side	California ave., bet. Bloomingdale and Wabansia aves			
East side	California ave., bet. Bloomingdale ave. and Cortland st		1	
N. E. cor	California ave. and Wabansia ave		1	
E. cor	California ave. and Bloomingdale ave		1	
West side	California ave., opp. Prescott st		1	
N. W. cor	California ave. and Thomas st		1	4.64
West side	Central Park ave., 300 ft. N. of Ohio st	****	1	
North side	Chicago ave., bet. Leavitt st. and Oakley ave	****	î	
V. E. cor	Chicago ave. and Oakley ave			
North side	Chicago ave., 300 ft. W. of Western ave		1	
North side	Chicago ave., 600 ft. W. of Western ave			130
V. E. cor	Chicago ave. and Rockwell st			
North side	Chicago ave., bet. Seymour and Rockwell sts		1	
N. W. cor	Chscago ave. and Hamlin ave	1000	1	
N. E. cor	Church ct. and Aberdeen st.	1		
N. W. cor	Clifton Park ave. and Twenty-third st		1	
West side	Clifton Park ave., 300 ft. S. of Twenty-third st.	1		
			1	1

		SIZE (OF HYD	OR'NT
LOCATION.	STREET.	Single.	2%-inch Double.	4-inch
West side	Clifton Park ave., 300 ft. N. of Twenty-third st.	1		
West side	Collins ct., 160 ft. S. of Laughton st		1	
N. E. cor	Congress st., and Homan ave	DOC.	1	
North side	Congress st., 800 ft. E. of Homan ave	1		
V. W. cor	Congress st. and Spaulding ave	1	1	
North side	Congress st., 300 ft. E. of California ave	1		
V. W. cor	Congress st. and Washtenaw ave		1	
V. W. cor	Congress st. and Congress park		1	
V. W. cor	Congress st. and Rockwell st	1		
North side	Congress st., 112 ft. W. of Halsted st.,		1	
West side	Cornelia st., opp. Bingham st		1	
N. W. cor North side.	Cortland st., bet. Rockwell st. and Washlenaw are.		1	
North side	Cortland st., opp. Fairfield ave	****	1	
North side	Cortland st., bet. Seymour and Rockwell sts		i	
North side	Cortland st., bet. Seymour st. and Western ave.		i	
S. E. cor	Crawford ave. and Warren ave		î	
N. W. cor	Cromwell st. and Milwaukee ave		î	
V. W. cor	Crosby st. and Larrabee st		î	
West side	Curtis st., N. of Washington st	1	1	
S. W. cor	Dania ave. and Bloomingdale ave	13.	1	
S. W. cor	Dania ave. and Wabansia ave	lica.	1	
N. W. cor	Dania ave. and Division st	See.	1	2.
West side	Dania ave., bet. Bryson and Division sts		1	
West side	Dania ave., bet. North and Wabansia aves		1	
West side	Dania ave., bet. Bloomingdale and Wabansia aves		1	
West side	Dickson st., bet. Blackhawk and Blanche sts		1	
West side	Dickson st., 300 ft. S. of Blackhawk st		1	100
West side	Dickson st., 600 ft. S. of Blackhawk st		1	
West side	Dickson st., bet. Blanche st. and North ave		1	- 4
V. W. cor	Division st. and Rockwell st		1	
V. W. cor	Division st. and Washtenaw ave		1	2
North side	Division st., opp. Francisco st		1 1	
North side	Division st., bet. California and Washtenaw aves.		1	
North side	Division st., bet. Rockwell st. and Washtenaw ave		1 1	
V. E. cor	Drummond st. and Cortez st		i	
V. E. cor	Drummond st. and Thomas st		i	
. E. cor	Drummond st. and Division st		i	
8. W. cor	Dudley st. and Webster ave			1
. W. cor	Dudley st. and Bloomingdale ave			100
West side	Dudley st. bet. Armitage ave. and Hervey st	1		
West side	Dudley st. bet. Bloomingdale and Wabansia aves.		1	
West side	Dudley st. bet. Hervey st. and Webster ave	1		
West side	Dudley st., 300 ft. S. of Division st		1	
South side	Dussold st., 280 ft. E. of Halsted st Edbrooke st., bet. Perry and Powell aves	1		
North side	Edbrooke st. het Perry and Powell aves		1	1

^{*} In place of single.

ENGINEER'S REPORT.

		SIZE OF HYDR'N			
LOCATION.	STREET.	Single.	2½-inch Double.	4-inch	
North side.	Eighteenth st., 300 ft. W. of Rockwell st	1			
V. W. cor	Eighteenth st. and Rockwell st		1		
V. W. cor	Ems st. and Oakley ave		1		
North side	Ems st. bet. Oakley and Western aves		1		
North side	Erie st. bet. Oakley and Western aves		1		
. W. cor	Fairfield ave. and Hinman st				
. W. cor	Fairfield ave, and Sixteenth st.,		1		
. W. cor	Fairfield ave. and Seventeenth st		1	+4	
. W. cor	Fairfield ave. and Eighteenth st		1	40	
. W. cor	Fairfield ave. and Van Horn st		1	10	
. W. cor	Fairfield ave. and Nineteenth st				
. W. cor	Fairfield ave. and Twentieth st		1		
. W. cor	Fairfield ave. and Twenty-first st		1		
V. W. cor	Fairfield ave. and Bloomingdale ave		1		
. W. cor	Fairfield ave. and Wabansia ave				
Vest side	Fairfield ave., bet. Bloomingdale ave. and Cortland st	****	1	10	
Vest side	Fairfield ave., bet. Bloomingdale and Wabansia aves		1		
Vest side	Fairfield ave., bet. North and Wabansia aves		1	2.5	
. E. cor	Fifteenth st. and California ave	****	***		
North side	Fifteenth st., 300 ft. W. of Ashland ave		1	40	
North side	Fifteenth st., 300 ft. W. of Paulina st			9 5	
V. E. cor	Fillmore st. and Francisco st		1	59.	
V. W. cor	Fillmore st. and Sacramento st	***	1	4.6	
North side	Flournoy st., 300 ft. W. of Sacramento st				
W. cor	Flournoy st. and Sacramento st		1	**	
North side	Fourteenth st., 300 ft. W. of Ashland ave		1		
North side	Fourteenth st., 300 ft. W. of Paulina st				
. W. cor.	Francisco st. and Cortez st		1		
V. W. cor	Francisco st. and Augusta st			2.4	
Vest side	Francisco st. and Linwood st Francisco st., 367 ft. N. of Twenty-fifth st	1	1		
Forth side	Frankfort st., 300 ft. E. of Hoyne ave				
. W. cor	Frederick st. and Wabansia ave		1		
. W. cor	Frederick st. and Bloomingdale ave				
Vest side	Frederick st., bet. Wabansia and Bloomingdale aves				
Vest side	Frederick st., 300 ft. N. of Bloomingdale ave.				
Vest side	Frederick st., bet. North and Wabansia aves		i		
Cor	Front st. and Halsted st	****	1		
N. W. cor.	Fulton st. and Seymour st		i	100	
orth side	Greenwich st., bet. Leavitt st. and Hoyne ave.		4		
orth side	Greenshaw st., 300 ft. W. of Western ave			100	
V. W. cor	Hamburg st. and Hoyne ave		1		
North side	Hamburg st., 300 ft. W. of Hoyne ave		1	1	
North side	Hamburg st., 300 ft. E. of Hoyne ave			1	
West side	Hamilton ave., 196 ft. N. of Adams st	1		10	
	Hamilton and 170 6 N of Jackson at	1	F-100 Str		
West side	Hamilton ave., 170 ft. N. of Jackson st				

^{*}In place of single.

		SIZE C	F HYD	R'NT
LOCATION.	STREET.	Single.	256-inch Double.	4-inch Double.
N. W. cor	Hamlin ave and Ohio st		1	
West side	Hamlin ave., bet. Indiana and Ohio sts		1	
West side	Hamlin ave., bet. Huron and Ohio sts		1	
N. E. cor	Harrison st. and Homan ave		1	
N. W. cor	Harrison st. and Spaulding ave		1	
North side	Harrison st., 300 ft. W. of Spaulding ave	1		
North side	Harrison st., 300 ft. E. of Sacramento st	2562	1	
N. E. cor	Hastings st. and Lincoln st		1	
S. W. cor	Heine st. and Armitage ave		1	
S. W. cor	Heine st. and Cortland st			**
N. W. cor	Heine st. and Bloomingdale ave		1	
S. W. cor	Heine st., bet. Wabansia and North aves		1	
West side	Heine st., bet. Wabansia and North aves		1	
West side	Heine st., bet. Wabansia and Bloomingdale aves.		1	
West side	Heine st., bet. Armitage and Bloomingdale aves. Heine st., bet. Cortland and Bloomingdale aves.		1	
North side	Henry st., 300 ft. E. of Centre ave	1.4		
North side	Henry st., 300 ft. E. of Ashland ave	1		
North side	Henry st., 300 ft. W. of Loomis st	1		
North side	Henry st., 300 ft. W. of Throop st	î	200	100
North side	Henry st., 250 ft. E. of Throop st	T	****	
North side	Henry st., 300 ft. W. of Waller st	i		
North side	Hinman st., 300 ft. W. of Hoyne ave	1		
North side	Hinman st., 240 ft. W. of Throop st.	1000	100	
North side	Hinman st., 450 ft. W. of Throop st.		1	
S. W. cor	Hoffman ave. and Fullerton ave		1	
N. W. cor	Hoffman ave. and Pleasant pl		1	4.
West side	Hoffman ave., 300 ft. N. of Milwaukee ave		1	
West side	Hoffman ave., 270 ft. S. of Fullerton ave		1	
West side	Hoffman ave., 280 ft. N. of Pleasant pl		1	
West side	Homan ave., 275 ft. S. of Twenty-first st	1		
N. W. cor	Homer st., and Rockwell st		1	
North side	Homer st., bet. Rockwell st. and Washtenaw ave		1	4.9.4
North side	Homer st., bet. Rockwell and Seymour sts Homer st., bet. Western ave. and Seymour st		1	
North side N. W. cor	Hoyne ave. and Frankfort st		1	200
. W. cor	Hoyne ave. and Asylum pl		1	
S. W. cor	Humboldt st. and Armitage ave		1	
S. W. cor	Humboldt st. and Cortland st		î	
V. W. cor	Humboldt st. and Bloomingdale ave	****	î	
S. W. cor	Humboldt st. and Wabansia ave		î	
West side	Humboldt st., bet. North and Wabansia aves		î	
West side	Humboldt st, bet. Bloomingdale & Wabansia avs		i	
West side	Humboldt st., bet. Bloomingdale av. & Cortl'd st.		î	
West side	Humboldt st., bet. Armitage ave. and Cortland st.		1	1
N. E. cor	Huron st. and Springfield ave		1	
N. W. cor	Huron st. and Seymour st		1	
North side	Huron st., and Oakley and Western aves		1	
		1	-	

		SIZE OF HYDR'NT				
LOCATION.	STREET.	Single.	254-inch Double.	4-inch		
North side	Huron st., bet. Rockwell and Seymour sts		1			
North side	Huron st., 250 ft. W. of Springfield ave		1			
North side	Indiana st., bet. Hamlin and Lawndale aves		1			
N. E. cor	Indiana st. and Lawndale ave		1			
North side	Jackson st., 300 ft. W. of Morgan st		1	200		
North side	Jackson st., 300 ft. W. of Aberdeen st		1			
North side	Jackson st., 300 ft. W. of Centre ave		1			
North side	Jackson st., 300 ft. W. of Throop st		1			
North side	Jackson st., 300 ft. W. of Loomis		1	100		
North side	Jackson st., 300 ft. W. of Laffin st		1			
N. E. cor	Jefferson ct. and Powell ave		1			
North side	Jefferson ct., bet. Powell and Perry aves		1			
N. W. cor	Johnson ave. and Thomas ave		1			
North side	Johnson ave., 350 ft. W. of Thomas ave		1			
North side	Johnson ave., 700 ft. W. of Thomas ave		1			
North side	Johnson ave., 366 ft. W. of California ave		1	+*		
North side	Johnson ave., 633 ft. W. of California ave		1			
North side	Johnson ave., 999 ft. W. of California ave		1			
. W. cor	Kedzie ave. and Congress st		1			
V. W. cor	Kedzie ave. and Kinzie st		1			
V. W. cor	Kedzie ave. and Carroll ave		1			
Vest side	Kedzie ave., 300 ft. N. of Kinzie st		1			
North side	Kinzie st., bet. Armour st. and Bixby pl		1			
North side	Kinzie st., bet. Elizabeth and Ada sts		1			
N. W. cor	Laffin st. and Henry st		1			
North side	Lake st., bet. Albany and Sacramento ave		1			
V. W. cor	Lake st. and Sacramento st.	1000	1			
North side	Laughton st., 259 ft. E. of Washtenaw av	1				
V. W. cor	Lawndale ave. and Chicago ave		1			
Vest side	Lawndale ave., 300 ft. N. of Chicago ave		1			
, W. cor	Lawndale ave. and Glenview ave		1			
Vest side	Lawndale ave., 300 ft. S. of Twenty-fourth st					
Vest side	Lawndale ave., 300 ft. S. of Twenty-third st					
V. E. cor	Lexington st. and Francisco st		1			
. W. cor	Lexington st. and Sacramento st		1			
orth side	Lexington st., 300 ft. W. of Sacramento st	1		++		
. W. cor	Lunn ct. and Western ave		1	4.6		
forth side	Lunn ct., 535 ft. W. of Western ave	1				
. W. cor	McGovern st. and Milwaukee ave		1	1		
orth side	McGovern st., 300 ft. W. of Milwaukee ave,		1			
North side	McGovern st., 600 ft. W. of Milwaukee ave	420	1			
North side	McGovern st., 900 ft. W. of Milwaukee ave	44.6	1			
North side	McGovern st., 1200 ft. W. of Milwaukee ave		1			
V. W. cor	Madison st. and Hamlin ave		1			
N. E. cor	Madison st. and Crawford ave		1			
V. W. cor	Madison st. and Central Park ave		1	66		
North side	Madison st., 600 ft. W. of Central Park ave	Marie 3	1			

^{*}In place of single.

		SIZE (F HYL	R'NT
LOCATION.	STREET.	Single.	24-inch Double.	4-inch
North side	Madison st., 300 ft. E. of Crawford ave		1	
North side	Madison st., 600 ft. E. of Crawford ave		1	
North side	Madison st., 900 ft. E. of Crawford ave	2000	1	
S. W. cor	Maplewood ave. and Bloomingdale ave		1	100
. W. cor	Maplewood ave. and Wabansia ave		1	
West side	Maplewood ave., bet. North and Wabansia aves.	1.000	1	
West side	Maplewood ave., bet. Bloomingdale and Wahansia aves	1200	1	
West side	Marshfield ave., 300 ft. N. of Taylor st Martin st., 259 ft. E. of Washtenaw ave	1		
North side	Martin st., 259 ft. E. of Washtenaw ave	1		
North side	Marvin st., 230 ft. W. of Washtenaw ave	1		
V. W. cor	Milwaukee ave. and California ave		1	
N. W. cor	Milwaukee ave. and Hoffman ave	10000	1	
V. W. cor	Milwaukee ave. and Powell ave	1000	1	
E. cor	Milwaukee ave. and Armitage ave		1	
North side	Milwaukee ave., bet. Cromwell and Myrtle sts		1	
North side	Milwaukee ave., bet. Powell and Perry aves		1	
North side	Milwaukee ave., bet. Cromwell and Rhine sts		1	
North side	Moffat st., W. of Seymour st	****	1	1
North side	Moffat st., bet. Western ave. and Seymour st		1	1
V. E. cor	Morgan pl. and Aberdeen st	1		
V. W. cor	Morgan pl. and Morgan st	1		1
S. W. cor	Mozart st. and Armitage ave		1	
West side	Mozart st., bet. Cortland st. and Armitage ave.		1	100
. W. cor	Mozart st, and Cortland st		1	-1
West side	Mozart st., bet. Cortland st. and Bloomingdale are		1	
N. W. cor	Mozart st, and Bloomingdale ave		1	
West side	Mozart st., bet. Wabansia and Bloomingdale aves		1	6.21
S. W. cor	Mozart st. and Wabansia ave		1	
West side	Mozart st., bet. Wabansia and North aves		1	
. W. cor	Myrtle st. and Fullerton ave			
N. W. cor	Myrtle st. and Berlin st			
. W. cor	Myrtle st. and Rhine st			
W. cor West side	Myrtle st. and Bremen st. Myrtle st. bet. Bremen st. and Milwaukee ave	****	1	
	Myrtle st. and Milwaukee ave	****		40
N. W. cor North side	Nebraska st., bet. Laffin and Ashland ave	***	1	
North side	Nebraska st., 300 ft. W. of Loomis st	1		1
North side	Nebraska st., 300 ft. W. of Throop st	1		133
V. W. cor	North ave. and Norman ave	1	****	4.4
N. W. cor	North ave, and Mitchell st.		1	.4.
N. W. cor	North ave, and Basel st		1	-
N. E. cor	North ave. and Basel st		1	
V. W. cor	North ave. and Humboldt bl'd		1	
N. W. cor	North ave. and Heinest		1	
N. W. cor	North ave. and Mozart st.	***	1	
S. E. cor	Ohio st. and Union st			
S. W. cor	Ohio st. and Desplaines st			
	out to and respinites services and and and and		1	100

^{*}In place of single.

+ ENGINEER'S REPORT.

1		SIZE C	F HYD	R'N
LOCATION.	STREET.	Single.	214-inch Double.	4-inch
N. W. cor	Ohio st. and Central Park ave		1	
N. W. cor	Ohio st. and Tinkham st		1	
N. E. cor	Ohio st. and Lawndale ave		1	
N. W. cor	Palmer ave. and Thomas ave		1	
N. E. cor	Palmer ave. and Humboldt st		1	
V. W. cor	Palmer ave. and Rendsburg st		1	
North side	Palmer ave., 316 ft. W. of Humboldt st		1	0.0
North side	Palmer ave., 367 ft. W. of Thomas ave		1	
North side	Palmer ave. W. of Thomas ave		1	10
North side	Park ave., 300 ft. W. of Falls st			
. W. cor	Peoria st. and Carroll ave	****	1	
N. W. cor	Peoria st. and Washington st		1	
West side	Peoria st., 214 ft. N. of Lake st		1	100
West side N. W. cor	Peoria st., 110 ft. N. of Fulton st		1	
V. W. cor	Perry ave. and Jefferson ct		1	
N. W. cor	Perry ave. and Cherry pl		1	
. W. cor	Perry ave. and Elbrooke pl		1	
. W. cor	Perry ave. and Fullerton ave		i	
West side	Perry ave., opp. Alice pl			1:
West side	Perry ave., opp. Clara pl			1
N. E. cor	Pleasant pl. and Perry ave		î	1
N. E. cor	Pleasant pl. and Powell ave			1
North side	Pleasant pl , bet. Powell ave. and Perry ave		1	
N. E. cor	Polk st. and Francisco st		1	
North side	Polk st., 300 ft. W. of California ave	1		
. W. cor	Powell ave. and Fullerton ave			7.7
S. W. cor	Powell ave. and Clara pl			++
. W. cor	Powell ave. and Alice pl			164
V. W. cor	Powell ave. and Edbrook pl			1.
. W. cor	Powell ave., bet. Jefferson ct. and Milwaukee ave.		1	1.
West side	Pratt st. and Hamilton ave			
V. W. cor	Prescott st. and Washtenaw ave		1	100
North side.	Prescott st., bet. California ave. and Washtenaw ave		1	20
North side	Prescott st., bet. Rockwell and Washtenaw ave		1	
V. W. cor	Ridgeway st., and Chicago ave			1.
West side	Ridgeway st., 350 ft. N. of Chicago ave			1.
N. W. cor	Robey st. and Superior st			
N. W. cor	Robey st. and Erie st			
N. W. cor	Robey st. and Emerson ave		1	1.
S. W. cor	Robey st. and Hamburg st		1	
S. W. cor	Robey st. and Asylum pl		1	100
N. W. cor	Robey st. and Frankfort st		1	100
S. W. cor	Rockwell st. and Wabansia ave		1	10
N. W. cor	Rockwell st, and Bloomingdale ave		1	
S. W. cor.,	Rockwell st. and Thompson st		1	

^{*}In place of single.

		SIZE	F HYE	R'N'
LOCATION.	STREET.	Single.	2%-inch Double.	4-inch
West side	Rockwell st., bet. Hirsch and Thompson st		1	
West side	Rockwell st., bet. Cortland and Bloomingdale avs		1	
West side	Rockwell st., bet, Wabansia and Bloomingdale avs	1000	1	
West side	Rockwellst het Wahansia and North ave	100	2	
West side	Sacramento st., 367 ft. N. of Twenty-fifth st	1		
S. W. cor	Sangamon st. and Fratt st		1	160
N. W. cor	Seventeenth and Rockwell sts		1	
North side	Seventeenth st., 300 ft. W. of Lincoln st Seventeenth st., 300 ft. W. of Rockwell st	1	****	
North side	Seventeenth st., 300 it. W. of Kockwell st	1		
N. W. cor	Seymour st. and Homer st		1	
5. W. cor	Seymour st. and Armitage ave			
N. W. cor	Saymour et and Moffet et	***	1	
N. W. cor	Seymour st. and Moffat st		1	
N. W. cor	Seymour st. and Bloomingdale ave Seymour st. and Ohio st		1	
. W. cor	Seymour st. and Wabansia ave		i	
West side	Seymour st., bet. Wabansia and Bloomingdale ave		1	
West side	Seymour st., 300 ft. N. of North ave	1000	i	
V. E. cor	Simons ave. and North ave		i	00
V. W. cor	Cinternal et and Dealemall et		-	
North side	Sixteenth st., 346 ft. E. of Rockwell st	1		
North side	Sixteenth st., 346 ft. E. of Rockwell st. Sixteenth st., 300 ft. W. of Rockwell st. Sixteenth st., 255 ft. W. of Western ave. Spaulding ave., 300 ft. N. of Twenty-first st. Springfield ave., 300 ft. N. of Indiana ave. Stations t. 400 ft. N. of Leavitt st.	1		
North side	Sixteenth st., 255 ft. W. of Western ave	1		
West side	Spaulding ave., 300 ft. N. of Twenty-first st	1		
West side	Springfield ave., 300 ft. N. of Indiana ave		1	
North side				
North side	Stave st., 200 ft. E. of California ave	1		
V. W. cor	St. Louis ave. and Twenty-second st		1	
West side	St. Louis ave., 216 ft. S. of Twenty-second st		1000000	
V. E. cor	Superior st. and Rockwell st		1	
V. W. cor	Superior st. and Seymour st		1	
. E. cor	Superior st. and Washtenaw ave		1	
orth side	Superior st., 300 ft. W. of Western ave		1	
orth side	Superior st., 300 ft. W. of Seymour st Taylor st., 300 ft. W. of Wood st		1	9
lorth side	Taylor st., 500 ft. W. of Western ave	1		
orth side	Taylor st., 300 ft. W. of Western ave	1	***	
orth side	Thirteenth st. 300 ft. W. of Ashland ave		1	
orth side	Thirteenth pl. 800 ft. W. of Laffin st	1	1	**
orth side	Thirteenth pl., 300 ft. W. of Blue Island ave	î		-
orth side	Thirteenth pl., 300 ft. W. of Centre ave	î		
orth side	Thirteenth st., 300 ft. W. of Ashland ave Thirteenth pl., 300 ft. W. of Laflin st Thirteenth pl., 300 ft. W. of Blue Island ave Thirteenth pl., 300 ft. W. of Centre ave Thirteenth pl., 300 ft. W. of Throop st Thirteenth pl., 300 ft. W. of Loomis st Thomas st. and Washtenaw ave	i		
orth side	Thirteenth pl., 300 ft. W. of Loomis st.	1		
. W. cor	Thomas st. and Washtenaw ave		1	
North side	Thomas st., bet. California and Washtenaw avs.		1	
North side	Thomas st., bet. Rockwell st. and Washtenaw avs		1	
V. W. cor	Tinkham st. and Indiana st		1	
		100		

^{*}In place of single.

		SIZE C	F HYD	R'NT
LOCATION.	STREET.	Single.	2½-inch Double.	4-inch Double
West side	Tinkham st., bet. Ohio and Indiana sts		1	
South side	Tremont st., 300 ft. E. of Homan ave	1		
S. E. cor	Tremont st. and Homan ave		1	
S. W. cor	Tremont st. and Spaulding ave	***	1	
West side	Turner ave., 300 ft. N. of Twenty-first st	1		
N. W. cor.	Twenty-second st. and Fairfield ave.		1	
N. E. cor.	Twenty-second st. and Mowry st			
N. E. cor	Twenty-second st. and Western ave		1	
South side	Twenty-second st., 300 ft. W. of California ave.			
North side	Twenty-second st., bet. Wood and Lincoln sts			
North side	Twenty-second st., bet. Robey and Lincoln sts.		î	
North side	Twenty-second st., 300 ft. E. of Oakley ave			
North side	Twenty-second st., 300 ft. E. of Western ave			
North side	Twenty-second st., 300 ft. W. of Hoyne ave			
N. W. cor	Twenty-fifth st. and Washtenaw ave			
N. E. cor	Twenty-fifth st. and Sacramento st			
North side	Twenty-fifth st., 300 ft. W. of California ave	1		
N. E. cor	Twenty-fifth st., 300 ft. W. of California ave Twenty-fifth st. and Francisco st	1		
North side	Twenty-fifth st., 800 ft. W. of Francisco st	1		
N. W. cor	Twenty-fifth st. and California ave		1	
N. E. cor	Twenty-fifth st. and Whipple st			
North side	Twenty-fifth ct., 300 ft. E. of Francisco st	1		
N. W. cor	Twenty-fifth ct. and Francisco st	1		
North side	Twenty-fifth ct , 300 ft. E. of Sacramento st	1		
North side	Twenty-sixth st., 300 W. of Rockwell st			
North side	Van Horn st., 320 ft. E. of Washtenaw ave			
N. W. cor	Walnut st. and Sacramento st			
North side	Walnut st., 270 ft. E. of Francisco st		i	
North side	Walnut st., bet. Albany ave. and Sacramento st.		1	
North side	Warren ave., 400 ft. E. of Crawford ave Warren ave., 800 ft. E. of Crawford ave		1	
North side	Warren ave. 1,200 ft. E. of Crawford ave		1	
N. W. cor	Washtenaw ave. and Van Horn st.		1	
N. W. cor	Washtenaw ave. and Sixteenth st		1	
N. W. cor	Washtenaw ave, and Seventeenth st		î	
N. W. cor	Washtenaw ave. and Rebecca st		î	
N. W. cor	Washtenaw ave. and Eighteenth st		1	
N. W. cor	Washtenaw ave. and Marvin st		1	
S. W. cor	Washtenaw ave. and Armitage ave		1	
N.W. cor	Washtenaw ave. and Cortland st		1	
N. W. cor	Washtenaw ave, and Bloomingdale ave		1	
S. W. cor	Washtenaw ave. and Wabansia av		1	
West side	Washtenaw ave., op. Homer st		1	
West side	Washtenaw ave. bet. North ave. & Wabansia ave		1	
West side	Washtenaw ave. bet. Bloomingdale ave. and Wabansia ave		1	
West side	Washtenaw ave. bet. Bloomingdale ave. and Cortland st		1	

		SIZE OF HYDR'NTS				
LOCATION.	STREET.	Single.	24-inch Double.	4-inch Double.		
S. E. cor	Western ave. and Sixteenth st. Western ave. and Thompson st. Western ave. and Twenty-fifth st. Western ave. and Wabansia ave. Western ave., bet. North ave. and Wabansia ave. Western ave., bet. Bloomingdale and Wabansia aves. Western ave., bet. Thompson st. and North ave. Western ave., bet. Thompson st. and Hirsch st. Whipple st. and Twenty-sixth st Whipple st., 300 ft. S. of Twenty-fifth st Whipple st., 369 ft. N. of Twenty-fifth st Wilmot ave., 300 ft. W. of Hoyne ave. Winthrop pl., 373 ft. S. of Polk st Wood st., bet. Armitage ave. and Hervey st York st., 240 ft. E. of Ashland ave.	1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1		
	Total in West Division		354 1436			
	Total Less by hydrants taken out and replaced by others of different sizes		1790	234		
	Total in use in West Division	1348	1790	234		

RECAPITULATION.

HYDRANTS TAKEN OUT DURING 1887.

Division.	24" Single.	21" Double.	4" Double.	Total.
North	16	0	0	16
South	1	0	0	1
West	11	0	0	11
Total	28	0	0	28

HYDRANTS PLACED DURING 1887.

Division.	24" Single.	2½" Double.	4" Double.	Total.
North	7	34	0	41
South	47	46	2	95
West	80	354	7	441
Total	184	434	9	577

TOTAL NUMBER OF HYDRANTS IN USE IN THE CITY.

Division.	21" Single.	21" Double.	4" Double.	Total.
North	428	358	129	915
South	725	697	190	1,612
West	1,848	1.790	234	3,872
Total	2,501	2,845	558	5,899

RIVER AND DREDGING.

As much dredging has been done during the year as the appropriation would admit of, but a good deal more is needed to make all parts of the river channel passable for boats of more than average draught.

The mean level of the water in the river has been six-tenths (0.6) of a foot below that of 1886, and from the experience of former years it is likely to be still lower during the coming season; in which case a large amount of dredging will be required to keep the channel passable for anything but the smaller craft.

The following tables show the height of water in the river and in Lake Michigan during the year 1887.

HEIGHT OF WATER IN LAKE MICHIGAN, 1887,

From observations taken at Crib.

MONTH.	Mean.	Highest.	Lowest.	No. of days above mean.
January	1.65	2.41	1.01	13
February	1.97	2.81	1.41	12
March	2.80	3.01	1.41	18
April	2.16	2.51	1.81	15
May	2.47	2.91	2.01	19
June	2.56	8 01	2.81	10
July	2.45	8.11	2.01	15
August	2.26	2.71	1.91	17
September	1.96	2.51	1.41	14
October	1.41	2.41	0.01	20
November	1.23	1.71	0.11	19
December	1.09	1.91	0.01	14
Average for year	1.96			

HEIGHT OF WATER IN CHICAGO RIVER, 1887,

From observations taken at pipe yard.

MONTH.	Mean.	Highest.	Lowest.	No. of d'ys*above mean.
January	2.13	2.70	1.50	18
February	2.77	4.10	1.90	11
March	2.72	3.70	2.30	12
April	2.60	2.90	2.00	12
May	2.82	3.40	3.80	14
June	2.94	3.30	2.70	11
July	2.92	8.30	2.60	14
August	2.76	3.20	2.40	17
September	2.41	2.80	1.90	9
October	1.98	2.50	0.90	12
November	1.61	2.80	0.80	14
December	1.42	2.40	0.80	11
Average for year	2.42			

^{*}Not including Sundays or holidays.

GRANITE PAVING BLOCKS.

In view of the fact that heretofore there have been only some four or five kinds of granite from available quarries in use, or rated as standard for paving purposes, it may be of interest to insert the report made by the City Engineer by the direction of the Commissioner of Public Works on the quality of a number of varieties presented by different parties.

The effect has been to place in competition upwards of a dozen sources of supply instead of four or five, and to materially lessen the price of granite paving.

Since the report was made several specimens of Wisconsin granite have been examined and passed as first-class.

CHICAGO, June 9, 1887.

GEO. B. SWIFT, Esq.,

Commissioner of Public Works.

DEAR SIR:—In response to your inquiry as to the merits of several samples of granite submitted for street paving blocks, I beg to report as follows:

For this purpose it is desirable that the stone should be not only hard and durable, but it should not wear smooth and acquire a polished surface. Smooth wear is a great practical objection to the use of excessive hard stones. Generally the hard and most durable granites possess the fault of slipperiness when set in pavements. The less durable granites wear roughly, and therefore afford a better foothold for horses; hence it is that for the sake of public convenience the hardest and most durable granites are not as satisfactory. Nothing short of actual experience under traffic can determine the behavior of some of the stone, for the durability under traffic, the tendency to wear round rather than flat, and to become slippery are dependent upon no conditions which can readily be foreseen. The size and distribution of the crystals, the nature and hardness of the constituent minerals operate in such a manner that two opposite combinations often produce nearly the same result, while rocks of nearly the same hardness frequently behave very differently under traffic.

I have classified and numbered the stone preserving the same characteristic as near as possible under the proper head.

CLASS A.

No. 1. Head Island.— Minerals well distributed, crystals small, the stone soft. Will make a good pavement where traffic is not heavy, and on approaches to bridges, etc., but not very durable.

CLASS B.

The following stones I consider will make a good, durable pavement for general purposes, and will not wear smooth under traffic:

- No. 2. Warsaw.
 - 3. Jaickes and Thatcher.
 - 4. Hurricane.
 - 5. Thousand Island.
 - 6. Montello.
 - 7. Marinette.
 - 8. St. Cloud.
 - 8½. Mesaba.—In this stone the quantity of mica is large but well distributed, and appears to be more in the form of crystals than any of the preceding. It deserves a trial.

CLASS C.

In the following stones the quantity of mica is large, and is distributed in the form of pockets. Will probably not be a durable stone, and caution should be used in adopting it for general purposes.

- No. 9. Forsyth.
 - 10. Sullivan.
 - 11. John McAdam.

CLASS D.

No. 12. Green Lake.—Is a harder and more durable stone than any of the preceding, in use. The edges do not break off and the stone become round, but the surface wears smooth. It is a good stone.

CLASS E.

No. 13. Berlin.—A laminated stone, utterly useless as a paving stone. CLASS F.

Hard, brittle stones; will chip off on the edges, wear round on the surface, and become polished under traffic; is useless for pavement.

No. 14. Sioux Falls.

15. Devil's Lake.

Respectfully submitted,

SAM'L G. ARTINGSTALL,

City Engineer.

BRIDGES AND VIADUCTS.

During the year 1887 the following named work has been done:

Twelfth Street Bridge was completed and opened for traffic in June.

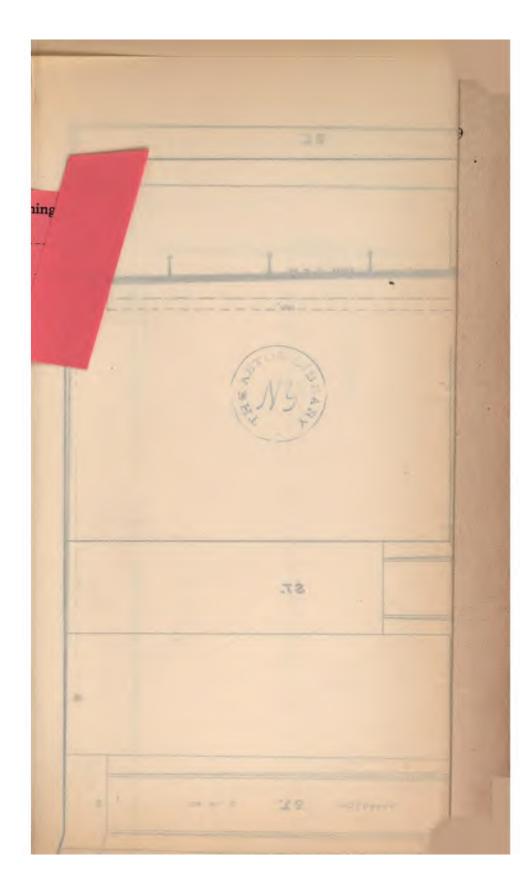
The West Twelfth Street Viaduct was opened at the same time, and the Lumber Street approach to said viaduct was completed early in September.

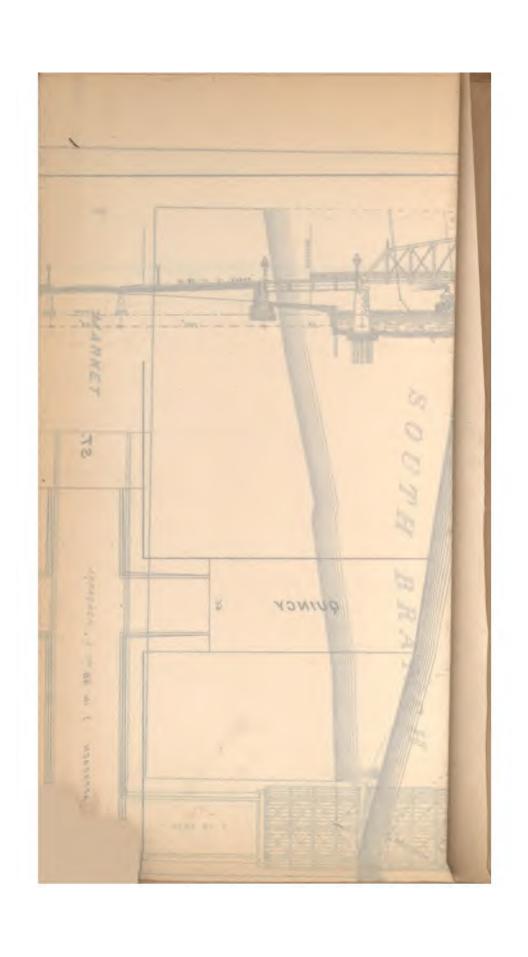
The plan of these structures with the estimate of cost was given in the report for 1886.

STATE STREET BRIDGE.

This structure was completed and opened for traffic in August.

It is a single roadway steel bridge, turned by steam, and is a first-class structure of its kind.





The cost was as follows:

Superstructure	\$24,440 (00
Engine and Machinery	2,942 (10
Sundry items	5,591 6	31
Total		- \$82,978 61

JACKSON STREET BRIDGE AND VIADUCT.

The center pier, east abutment and protection for this structure are completed, and considerable work has been done on the viaduct approaches and piers.

Contracts have been let for the superstructures of both bridge and viaduct and it is expected that the structure will be open for traffic July 1, 1888.

The cost of the bridge may be summed up as follows:

Substructure	\$49,806 67
Superstructure	76,500 00
Engine and Machinery	4,526 00
Inspection, superintendence, etc	800 00
Total	\$181,682 67

The cost of the viaduct will be approximately as follows:

Portion of substructure contracted for	. \$83,895	00
Changes in sidewalks, water pipes, sewers, catch basins,	,	
lamp posts, brick area wall in Canal street, super-	•	
intendence, inspection, etc	52,605	00
Superstructure	75,700	00
	\$212,200	00
Less amount to be paid by R. R. Co	74,600	00
Total		\$187,600 00

EIGHTEENTH STREET BRIDGE AND VIADUCT.

The center pier, abutments and protection of this bridge are nearly complete, and the substructure of the viaduct is well under way.

Contracts have been made for the superstructure of both bridge and viaduct, and structures will probably be completed about May 1st.

The C. & W. I. R. R. Co. pay for one-sixth of the center pier and all of the east abutment of the bridge, and the interested railroads pay the entire cost of the viaduct.

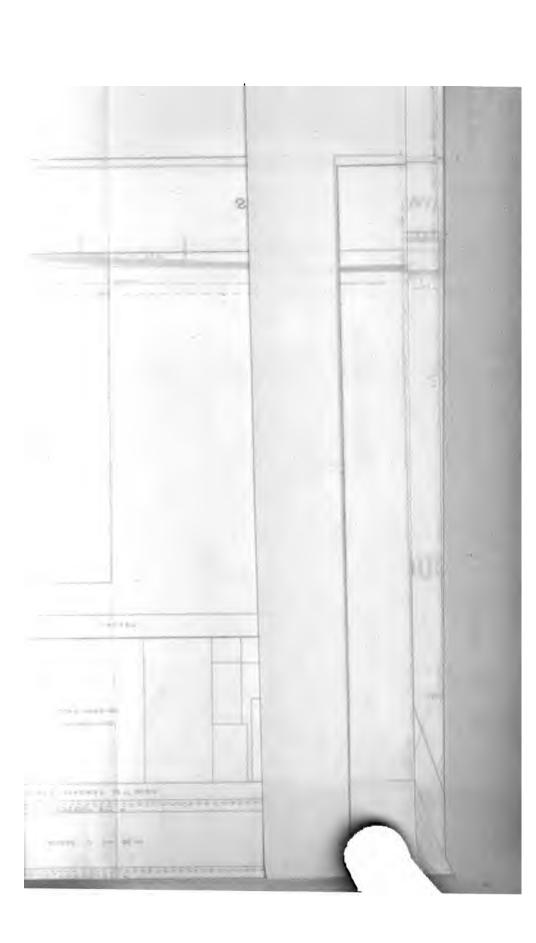
An approximate estimate of the cost is as follows:

Cost of center pier, abutments and protection (est.)	\$45,000	00	
Superstructure	21,500	00	
Superintendence and inspection	800	00	
-	\$67,300	00	
Of which the R. R. Co. will pay (est.)	12,000	00	
City's portion		_	\$55,800

The estimated cost of the viaduct is as follows:

Substructure	\$28,000	00
Superstructure	83,466	00
Changes in water pipe, sewer, gas main, inspection and		
superintendence	8,000	00
Total	\$114,446 <i>(</i>	— 00

All paid by the Railroad Companies.



The substructure for Dearborn Street Bridge is nearly completed, and as soon as the North Chicago Street Railroad Company can operate their cable through La Salle Street Tunnel the bridge at Wells street will be removed and placed at Dearborn street.

This work is all to be done at the expense of the Street Railroad Company.

The viaduct at Indiana street has been very seriously delayed, in consequence of the Pittsburgh Bridge Company not having their material ready.

Arrangements are being made to turn the bridges at Madison street and at Randolph street by steam, April 1st being the date set.

The following report from Geo. R. Bramhall, Superintendent of Bridges, gives a statement of repairs made on bridges and viaducts by the Department during the year 1887:

CHICAGO, February 6, 1888.

W. R. NORTHWAY, Esq.,

Acting City Engineer.

SIR:—Beyond keeping up the general repairs on the bridges and viaducts during the past year, not only from the increasing traffic over them, but from an unsually large amount of damages sustained by collisions from vessels and propellers, more renewing or more permanent improvements were put on them than in any previous year. Among the following named bridges and viaducts will be found the largest share of what may be termed permanent improvements, or renewal.

State street center protection was mostly rebuilt and clumps of fender piles driven at each of the corners or angles, besides six or seven clumps were driven in the north draw to protect the new steel bridge while being built.

Clark street center protection was rebuilt, all of the west half with new piling and timbering, and fender clumps driven at each of the angles, and two clumps near the turntable in the north draw.

Additional piles were driven at the west approach of Lake Street Bridge, likewise at the south end of the center protection. A new brick bridge-house was built at the southwest corner of the west approach, afterwards moved across to the north side of the street on a new foundation; and a new and commodious bridge shop, for storage and tool-house, was built under the west approach.

On Randolph Street Bridge the old sidewalks were taken off, the beams cut off and reduced one foot in width, and rebuilt; all the iron work thoroughly cleaned and painted two coats; new clumps of fender piles were driven at each corner of the east approach; the south half of the center protection was rebuilt, and fender clumps driven on the corners of the protection; twenty cords of rubble stone were put inside

of the piling of the center pier, and bents put up under timbering in turntable and braced to strengthen it, and prevent it from swaying back and forth, and an additional chain with two wraps put on around the piling of the center pier, to strengthen the old piles.

The south end of center protection at Van Buren Street Bridge was rebuilt, and a large clump of fender piles driven on the southeast angle of the protection, and a new foundation put under the bridge-house.

The center protection at Twenty-second Street Bridge was rebuilt with all new timbering. Fifty piles were driven in the repairs of center protection and fender clumps. Both of the long approaches were replanked, and a new foundation put under the bridgehouse.

On the night of the 15th of July the Fuller Street Bridge was knocked several feet off the center, by a collision. After being replaced, all of the old flooring and timbers were stripped off, new stringers and flooring put on the roadway, all of the iron work cleaned and painted two coats, and sixty thirty-five-foot piles were driven for protection in the west draw and fenders for the west approach.

At Western avenue the bridge was raised and all the old timbering and planking taken out, new turntable built and gear reset.

Indiana Street Bridge was rebuilt completely, except bottom and top chords and turntable, and all painted two coats.

After the east draw was dredged out in October, the east abutment settled down about nine inches and slid out in the channel about six inches, involving the necessity of driving heavy sheet plank, six by twelve inches and thirty-four feet long, close together to stop the outward movement.

A new foundation was built under the bridge-house, Chicago Avenue Bridge was replanked; new and heavy bracing put on the pile bents on the east approach to resist the outward movement of the approach, owing to the bad condition of stone abutment and outward thrust.

North Halsted Street Bridge was replanked new, both of the approaches were replanked with two-inch travel plank, and additional long piles were driven in the fender clumps in the south draw.

Canal and Halsted Street Bridge was raised up, all of the timbering and planking in the turntable was renewed, and seven cords of rubble stone put in the piling of the center pier to strengthen the piling.

The bridge-house, like that of Lake street, had to be moved across to the west side of the street to accommodate some private improvement, and new foundation put under it.

East Division Street Bridge was replanked on new stringers.

The new bridge at West Division street was painted two coats, and clumps of fender piling driven in the east draw. The center protection at North Avenue Bridge was rebuilt completely with new timbering and new piling, an outlay of over one hundred piles; both approaches were replanked and the bridge painted two coats.

Clybourn Place Bridge and bridge-house were given two coats paint.

Fullerton avenue bridge-house had to be moved across the street to accommodate some improvement.

At State Street Viaduct the roadway system was changed by substituting wooden girders and wooden beams in place of the iron I beams, and entirely rebuilt and well painted.

Randolph Street Viaduct was rebuilt completely except the iron work, which was thoroughly cleaned and all well painted.

Van Buren Street Viaduct was replanked and new sidewalks built.

The Twelfth Street Viaduct over the Burlington and Fort Wayne tracks was replanked on both roadways, and a sidewalk built on the approach to Lumber street, from the viaduct over the Wisconsin Central tracks.

At South Halsted and Sixteenth Street Viaduct new sidewalks were built, and all the old covering of the bottom chords taken off and renewed. The iron work was thoroughly cleaned and all received two coats paint.

At the Canal Pumping Works the grounds and road-

ways adjoining the boiler rooms were planked over to facilitate the unloading of coal, and to avoid the deep mud during heavy rains and breaking up from frosts.

Considerable work was done by this Department in the forepart of the season at the Bridewell, raising and shoving up settling brick walls of additional buildings in course of erection.

At Washington Street Tunnel the driveways were replanked with oak plank and storm doors put up and painted at each of the entrances of the foot passage.

A temporary fence was put up at the most exposed place of the north approach of the La Salle street tunnel, and a small building at the foot of La Salle avenue, to be used for a vessel dispatching office.

At Sangamon and Kinzie Street Viaduct new sidewalks were built, and all the iron work cleaned and painted two coats. The roadway was replanked diagonally with three-inch Norway pine plank; experience has proved that pine plank laid on in this manner will wear quite as long as oak, the cost being about one-fourth less, as can be seen at the Canal and Sixteenth Street Viaduct, which was replanked two years ago last Fall in the same manner, and has worn about equal with the oak at other places.

North Halsted and Kinzie Street Viaduct was all cleaned off and rebuilt, and the iron work all thoroughly cleaned and painted.

The channel bars in the bottom chords in both the

north and south spans of the structure, which is directly over the main passenger tracks, the web of the bars was found to be completely gone or destroyed by corrosion, nothing left of the bars in many places but the flanges; the result was that false bents had to be put up and the old channel bars taken out and new bottom chords put in the two spans.

This viaduct was built in 1873, being in use four-teen years. It may not be amiss to state that the bottom chords of the bridges and viaducts when exposed to the constant fumes of soft coal smoke from tugs and locomotives, deteriorates them to an alarming degree, and this waste is continually going on in the most vital parts of the structures. The bottom chords in Randolph Street Bridge, and others recently cleaned and painted, were found to be in a bad condition from the same cause. There seems to be no means of arresting this waste except by frequent cleaning and painting.

The cost of maintaining the bridges and viaducts the past year was \$81,460.32; credit by old iron from old structures, \$9,206.26; leaving actual cost at \$72,254.06.

Respectfully submitted,

G. R. BRAMHALL,

. Superintendent Bridges.

QUALITY OF WATER.

The quality of water has been good during the entire year, except perhaps in February, when, during a freshet, the crib was probably surrounded for a few hours with discolored water.

LAKE TUNNELS.

The lake tunnels continue in good order, but the continued enormous growth of the city renders a further water supply necessary in the near future.

A contract has therefore been entered into with Mr. Andrew Onderdonk for the construction of a new tunnel, to be eight feet in internal diameter and extend four miles eastward under Lake Michigan, together with the necessary connecting tunnels.

The contract extends through three and one-half years from date of contract.

LAKE CRIB.

It has been considered best, in view of possibilities, to add a protection to this structure in the shape of a breakwater, which will surround the present crib at a distance of thirty feet therefrom.

The contract for this work has been let to the Fitz-Simons & Connel Co., and the work is to be completed the coming season.

NEW INLET PIER.

Owing to a series of unforeseen delays, the work on this structure was not quite complete when the cold and stormy weather set in and caused a suspension of the work.

About two weeks will probably suffice for its completion as soon as the weather permits.

CHICAGO, December 31, 1887.

MR. SAMUEL G. ARTINGSTALL,

City Engineer.

DEAR SIR:—I herewith present the report of the number of water meters in use on the 31st day of December, 1887, also the number of hydraulic elevators, with the amount of revenue collected during the year 1887 for water measured by meters and used by hydraulic elevators and motors.

Respectfully submitted,

H. A. HAWKINS,

Superintendent Meters.

HYDRAULIC ELEVATORS.

Number in use December 31st, 188638	000
Number added during the year 1887	CAS
Number removed during the year 1887	5
Number in use December 31st, 188738	1

CHICAGO, December 31, 1887.

Revenue collected during the year 1887 measured by meters and used by hydraulic elevators and motors amounts to \$499,233.95; a little more than one-third of all the money collected for water rates, it being \$23,452.91 more than the collection for the previous year from the same source.

The seeming discrepancy between the elevators reported in use December 31st, 1886, and December 31st, 1887, is explained by the fact that elevators put in use have always been reported and those removed or abandoned and those run by steam and gas engines have not been entered in the report. There are now quite a number of elevators where the street valve is sealed and has been for more than one year that are liable to call upon the Department to break the seal and use water for a short time. Such are reported as not using water.

Submitted respectfully,

H. A. HAWKINS.

Superintendent Meters.

WATER METERS.

SIZE OF METERS.	%-inch.	M-inch.	1-inch.	114-inch.	g-inch.	3-inch.	4-inch.	6-inch.	Total.
Number in use December 31, 1886	999	227	989	488	381	881 12	t- 00	+ +	3,085
Whole number	688	253	1,049	543	441	848	15	80	3,834
Number in use December 31, 1887	672	249	1,028	588	485	833	15	0.5	8,278
Meters owned by City	240	195	161	142	94	143	14	0 8	1,165
Total in use	673	949	1,028	588	435	888	15	83	8,278
Number purchased from Manufacturers	11	30	37	9	17	6 1	0 0	0 0	121
Total	98	88	48	18	18	2	10	0	150
Number on hand December 31, 1887	37	22	36	15	6	25	4	0	148

FULLERTON AVENUE PUMPING WORKS.

These works have been in continuous operation during the year, excepting the month of March, when they were shut down for the purpose of overhauling the machinery.

The entire discharge has been from the lake into the river.

The works are in good repair.

STATEMENT OF THE OPERATION OF THE PUMPS AT THE FULLERTON AVENUE CONDUIT FOR THE **VEAR 1887**

of | Stopped Engines on account of fresheard Regimes on account of freshear and for the purpose overhauling machinery. | Started Pumps April ad. 22,662,876 22,126,573 22,734,109 31,829,890 33,231,343 22,088,234 23,288,229 23,005,097 32,341,528 34,909,011 22,229,6 Luck per 100 lbs. 325,549 351,0744 847,7564 333,9474 3,096,350 1,371,799 Pounds of Oil con-sumed pr. Month for Pumping. 374,900 529,400 130,100 508,250 509,800 531,300 Pounds of Coal consumed per Month for Pump-15,398 15,435 15,452 15,398 15,355 Average Number of Cubic Feet of Water pumped per Minute. Total Number of Cubic Feet of Water pumped into the Lake. . 642,959,390 663,052,340 664,160,010 651,087,240 400 636,660,850 166,701,920 173,194,690 664,024,125 638, 195, 810 518,352,650 646,609.875 Total Number of Cubic Feet of Water pumped into the River. 671,706, Average Number of Revolu'ns per Minute.
Average Head of Water against Pumps. 2.86 2.83 2.80 2.82 2,88 2.88 2.90 2.90 2.90 2.85 2.87 75.82 75.50 76.05 76.95 76.45 75.41 75.61 80 13 07 42 75 25 76. 76. 76 3,073,405 819,243 2,291,164 3,298,322 3,199,404 3,281,931 3,223,915 3,323,674 3,174,563 3,158,305 3,280,505 32,119,521 Total Mumber of Revolutions per Month. 701:45 719:00 716:45 181:30 703:00 698:00 508:30 720:15 7,059:30 Number of Hours 690:4 MONTHS February ... May Averages September October . . . November December Totals anuary August March. June ..

During the month of August an apparatus for using crude petroleum as fuel was introduced and used exclusively the remainder of the year.

The following statement of tests, made by Mr. T. T. Johnston, Assistant Engineer, of the evaporative qualities of oil burned with this apparatus compared with coal, may be found of interest:

CHICAGO, January 12th, 1888.

MR. SAMUEL G. ARTINGSTALL,

City Engineer.

DEAR SIR: The following is a statement of the consumption and performance of oil as a fuel at the Fullerton avenue pumping station.

The use of the oil began in August, 1887, and the statement pertains to the period prior to January 1st, 1888.

I have the records of four direct trials of the evaporative power of the oil.

Three of these were made by Mr. Turnbull, with the following results:

Date 1887.	Duration, hours.	Revolu-	Temp. of Feed.	Lbs. of Oil at 7 lbs. per gal.	Lbs. of Feed Water.	Evap. Lbs. Water pr.lb.ofOil
September (?)	2.57	11856	134°	1176	14600	12.41
September 22nd	7.55	34090	139°	3528	43700	12.386
November 16th	6.30	28664	137°	2940	36200	12.31

The fourth trial was made by myself, January 7th, 1888.

The results are set forth in the following:

Duration in hours.	Revolu- tions per hour.	Head against pump.	Bbls. of oil.	Lbs. of oil at 7.1 lbs. pr. gal.	Lbs. of feed water.	Temp. of feed water.	Evap. lbs. water pr. lb. oil.
9.30 to 10.30	4658	2.90	1.70				
10.30 to 1.00	4629	2.90	1.68				
1.00 to 2.00	4619	2.85	1.70				
2.00 to 3.00	4681	2.90	1.70				
3.00 to 5.00	4630	2.75	1.725				
5.00 to 6.00	4630	2.85	1.70				
6.00 to 7.30	4576	2.85	1.67	.,,,,,,			
Averages per hour for 10 hours	4630	2.86	1.695	505.449	6005	127.47	11.88

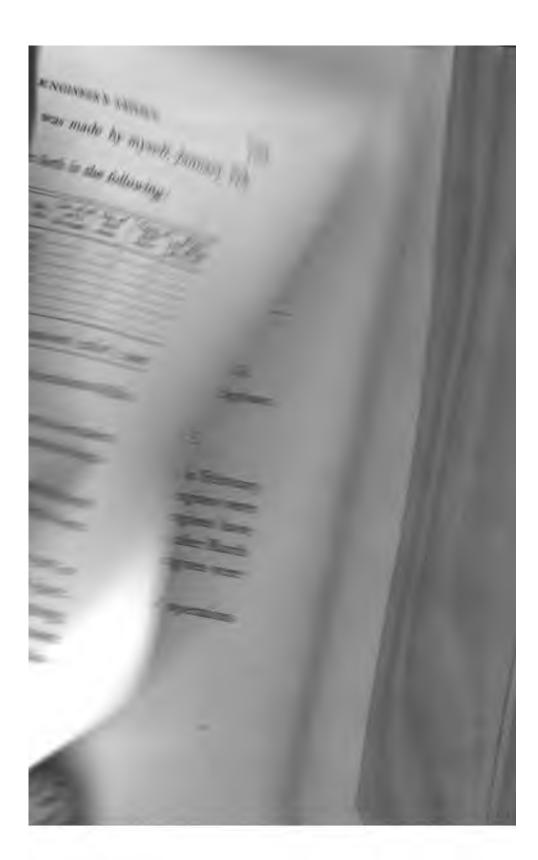
The steam pressure for all of these trials was 50 lbs. above atmosphere.

The oil used or burned January 7th, has been taken to weigh 7.1 lbs. per gallon, resulting from the weighing of a sample.

Mr. Turnbull weighed a sample last fall and found a gallon to weigh 7.00 lbs., which weight has been used in reducing his trials.

Ordinarily, the temperature of feed water is 120° or a little less—the aim being to maintain this figure. The following is the reduction of the foregoing results to the common basis of 50 lb. boiler pressure and 120° feed water temperature. That is, a reduction to ordinary working conditions.

THE PERSON NAMED IN Dright and disputations THE PERSON IS IN STREET mind to make the party The following streets of 1985, T. Junes have being to qualities of all licensis will discuss bri the with coal, may be bear at most bot be MR. SAMUEL G ARTOEST cer City Engrant. and Daniel Sir: The following is via and performance avenue pumping sta-Cost The of the oil began in Supe Testains to the per Supe Of w Subs Supe Char



No. of trial.	Actual temperature of feed water.	Ordinary temperature of feed water.	Evaporation obtained.	Equiv. evap. from and at 212°	Equiv. evap. from and at 120°
1	184.00	120	12.41	18.75	12.25
2	189.00	120	12.39	13.67	12.17
3	187.00	120	12.31	18.60	12.12
4	127.47	120	11.88	18.246	11.80

If the weight of oil per gallon be made the same for all trials, the following results for ordinary conditions:

Vo. of trial.	7,00 lbs. per gallon. Evap. from and at 120°	7.10 lbs. per gallon. Evap. from and at 120°
1	12.25	12.07
2	12.17	11.99
8	12.12	11.95
4	11.95	11.80

The following is a statement of oil burned in 1887, together with an approximation to evaporative power based on the hypothesis that at all times the amount of feed water per revolution was constant:

Month.	Bbls. of oil. 43 gallons per bbl.	Approximate Evaporation.
August	45.345	(?)
September	1107.1125	(?)
October	1194.0525	12.28
November	1182.355	11.85
December	1185.865	12.27
	4864.230×42×7—	8851288 tons.
	2000	

The following was the evaporative power of coal in the months named, feed water used being determined in same hypothesis:

Month.	Evaporation.
May	8.04 8.24 8.04

Very respectfully,

THOS. T. JOHNSTON,

Assistant Engineer.

CANAL PUMPING WORKS.

With the exception of twenty-one days in February and thirteen days in March, when the engines were stopped on account of high water, the engines have been in continual operation; three engines after March 20, except seventy-six days, when four engines were in action.

The following table gives the detail of operations for 1887:

OPERATIONS OF ENGINES AT CANAL PUMPING WORKS.

	REMARKS.		Stopped twenty-one days in February on account of high water.	stopped thirteen days in March—water running over the dam at Desplaines river and an ice-gorge in the	No Stop.	No Stop.	No Stop.	July, and continued to run them for 76 days, and bal-	No Stop.						
con-	Pounds of coal	1,508,125	254,000	777,250	1,370,550	1,442,000	1.456,400	1,509,110	1,811,706	1,007,465	1,393,005	1,285,465	1,437,390	15,337,110	
Talev	Average number cubic feet of a pumped per min				***************************************	*********		*********	*********		********			***************************************	
Water	Average head of water pumped against.		2.10	2.60	3.20	3.00	3.90	3.90	3.20	3.30	8.40	3.50	3.80		3.30
Jo 1	Average heigh water in canal.	6.80	4.30	4.80	5.10	5.10	5.20	6.30	5.20	9.00	4.70	4.40	4.60		5.93
10 1	Average heigh	1.60	2.20	2.20	1.90	2.10	2.30	2.10	2.00	1.70	1.30	0.90	08.0		1.7.3
lo 1	Average number revolutions per ute.	死11	54.17	78	78	78%	781/2	76	7.4	22	73%	75%	741/6		78%
run	Engine No. 4.	744		*****	720		720	504	672	900	240	619	480	5,599	
hours onth.	Engine No. 3.	744		345	*****	744	720	744	744	672	744	720	744	6,921	
Number of hours run per month.	Engine No. 2.	744	188	374	720	744	720	744	744	720	744	634	524	7,600	
Num	Engine No. I.		188	374	720	744		744	744	000	744	888	360	5,506	-
	MONTH.	January	February	March	April	May	June,	July	August	September	October	November	December	Totals	Average

BUILDINGS FOR FIRE DEPARTMENT.

The following houses have been built for the Fire Department since the last report:

The hearty co-operation of the Commissioner and officers of the Department, and the faithfulness and efficiency of the entire staff of this Bureau, has made the working smooth and the relations pleasant.

Very respectfully,

WM. R. NORTHWAY,

Acting City Engineer.

DUTY TEST OF GASKILL ENGINES.

DEPARTMENT OF PUBLIC WORKS, COMMISSIONER'S OFFICE, Oct. 16, 1887.

Messrs. THURSTON, COON AND WARRINGTON,

Experts to test the "Gaskill Pumping Engines," North Side Pumping Station.

Gentlemen:—In conducting the test of the machinery, we desire that you determine both the capacity and duty of the machinery.

In the performance of said duty and capacity, the steam pressure shall not exceed eighty (80) lbs. per square inch in the boilers, and the piston speed of the engines shall not exceed one hundred and twenty (120) feet per minute.

The coal used shall be ordinary Anthracite Coal, and the duty shall be performed without any deduction from the coal consumed, of clinkers, or any friction of machinery, friction of water in pumps, or connections for the use of steam, for fuel pumps, or any purpose due to operation of the machinery as a whole.

Also, to determine the capacity of said engines, boilers, pumps and appendages, in U. S. gallons, per day of twenty-four hours, under a maximum head of one hundred and fifty (150) feet above the surface of water in suction-well, with a piston speed of one hundred and twenty (120) feet per minute.

One or both the engines may be tested at one time, at the option of the experts.

Your committee will also determine and report if the design, material and workmanship, either as a whole or in part, are excellent, ample and sufficient for the purpose intended and comply with the specifications for the same, a copy of which is appended hereto.

Respectfully,

GEO. B. SWIFT, Commissioner of Public Works. CHICAGO, October 29, 1887.

HON. GEO. B. SWIFT,

Commissioner of Public Works.

SIR:—The undersigned, the committee appointed by you to make a trial of the new Gaskill pumping engines, now in operation at the North Side pumping station, beg leave to submit the following report of the results so obtained:

A trial of each set of machinery was made, beginning on Monday, the 24th inst., with the west pair of engines, the trials being of twenty-four hours' duration each, that period having been adjudged by the committee sufficient to settle the questions referred to it by the city. A supplementary trial was also made of the engines first tested to determine the efficiency of the boilers and the distribution of heat in the engines. The data obtained and the calculated results will be submitted in full detail later.

The conclusions of your committee are as follows: The contract made with the Holly Manufacturing Co., of Lockport, N. Y., the builders of the engines, binds them to furnish two sets of pumping machinery, each capable of delivering 12,000,000 gallons of water per day of twenty-four (24) hours, against a head of one hundred and fifty (150) feet, the piston speed not exceeding one hundred and twenty (120) feet per

minute, and to develop a duty of not less than 95,000,-000 foot pounds per one hundred (100) pounds of coal burned in the boilers, no allowance for ashes or any other wastes being made.

The contractors are also called upon to furnish engines of good design, construction and material.

Your committee find, upon test, that the engines furnished by these contractors are of good design, of excellent wormanship and, so far as they have been able to judge by inspection, of the best of material. This committee is also able to certify that the stipulated capacity has been secured, and that the duty actually obtained is considerable above that demanded, exceeding one hundred million (100,000,000) foot pounds of work done per one hundred (100) pounds of coal consumed.

Very respectfully,

R. H. THURSTON,
J. S. COON,
JAS. N. WARRINGTON,

Committee.

CHICAGO, February 21, 1888.

Hon. GEO. B. SWIFT.

Commissioner of Public Works.

DEAR SIR:—I beg to present the enclosed report of results in detail of the trial of the Gaškill pumping engines, at the North Pumping Station, with compliments of the committee.

Very respectfully,

JAS. N. WARRINGTON.

REPORT OF TRIALS FOR DUTY AND CAPACITY OF GASKILL PUMPING ENGINES AT NORTH SIDE WATER WORKS, CHICAGO, ILL., OCT. 24–28, 1887.

Hon. GEO. B. SWIFT,

Commissioner of Public Works, Chicago, Ill.

SIR:—Your committee herewith respectfully submit their final report on duty and capacity trials of the two sets of Gaskill pumping engines supplied to your city in 1887, by the Holly Manufacturing Company, of Lockport, New York.

DESCRIPTION OF PUMPING ENGINES.

The machinery tested is that contained in the recent addition to the North Side Water Works, and comprises two independent sets of pumping engines, each set being really two independent and complete engines coupled to a common shaft, with cranks at right angles.

The engines are of the compound, condensing, horizontal beam and fly-wheel type. Each half of each engine has two steam cylinders situated in a vertical plane, and parallel to each other, the high-pressure being above the low-pressure, and very close together, making the steam passages between them as short as possible and keeping the clearance spaces down to a minimum.

The pistons being connected by short links to the short vertical beam, at opposite ends, travel in opposite directions.

The steam cylinders, sides and heads, are steam jacketed.

The double-acting pump plungers are in line with either low-pressure steam cylinder, and connected direct.

The high-pressure cylinder transmits its power to the pump plunger through the beam, which latter is between the steam cylinders and pumps.

The upper end of the beam is also connected with the fly-wheel shaft, the pedestal of which rests on top of the pump delivery chamber.

The low-pressure steam inlet valves, which are also the high-pressure exhaust valves, and the lowpressure exhaust valves are multi-ported, or "gridiron" slides, worked by eccentrics from a lay-shaft lying alongside the high-pressure cylinder. The highpressure inlet valves are double-beat poppets, operated by a "drop" cut-off, adjustable by hand.

The valve gear gives a very good steam distribution, favorable to economy in the consumption of coal.

The pump valves are numerous and very small, having a lift of only five-sixteenths inch, and a clear water way of about one and one-fourth square inch. The valves, faced with rubber, are noiseless and very efficient, as is shown by the small loss of action, or slip, being about 23/4 per cent. on the west engine and about 3.2 per cent. on the east engine.

All bearing surfaces are ample for long continued and uninterupted service, while the design and construction are to be commended for great strength throughout. The workmanship is also excellent.

PRINCIPAL DIMENSIONS OF THE ENGINES.

Diameter of high-pressure pistons27 inc	hes
Diameter of low-pressure pistons54 "	
Stroke of pistons and plungers, nominal40 "	
Diameter of high-pressure piston rods 3.5 "	
Diameter of low-pressure piston rods 4.5 "	

CLEARANCE, IN TERMS OF CYLINDER VOLUMES.

High-pressure, back end3.72	per	cent
High-pressure, piston rod end3.77		ik
Low-pressure, back end2.102		86
Low-pressure, piston rod end2.055		25

Diameter	of plungers30 inches	
Diameter	of plungers, rods 5 "	

STROKE OF PUMP PLUNGERS OBSERVED.

East engine, east plunger	.39,687	inches
East engine, west plunger	39,781	"
West engine, east plunger	39,812	11
West engine, west plunger	.39,812	

BOILERS.

Steam is supplied to the engines from boilers of the horizontal, return tubular type, in brick setting. They were also furnished by the Holly Manufacturing Co. The steam pipe, passing from the boilers, passes through the uptake for a considerable distance, thus exposing the steam to the superheating action of the escaping gases. The superheating actually realized is slight, but it ensures dry steam.

DIMENSIONS OF BOILERS.

Diameter of shell	66	inches.
Length of shell	18	feet.
Number of tubes	66.	
Diameter of tubes	4	inches.
Diameter of steam drum	33	14
Width of grate	. 5	feet.
Length of grate	. 5.	25 feet.

Grate area	. 26.2	5 sq. feet.
Area of chimney	.44.4	
Height of chimney	125.	feet.
Length of flues connecting to chimney	, 16.	**
Area " " "	22.	sq. feet.
Heating surface, water	438.7	**
Superheating surface, steam pipe	182.	**
Draught area, through tubes	5.7	6 "
Ratio grate to water heating surface	1 to 5	4.8

Feed water for the boilers is supplied by feed pumps driven by the pumping engines. The feed water is taken from the hot well, from which it passes through a small heater whose source of heat is the condensations from the jackets. The jacket condensations are also pumped into the boiler. By this means an average temperature of 180° was imparted to the feed water.

CONTRACT REQUIREMENTS.

The contract with the Holly Co. binds them to furnish two sets of pumping engines, capable of a combined delivery of twenty-four million gallons of water per day of twenty-four hours, against a head of one hundred and fifty (150) feet, at a piston speed not exceeding one hundred and twenty (120) feet per minute, at a boiler pressure not exceeding eighty (80) pounds per square inch, and to develop a duty of not less than ninety-five million foot pounds (95,000,000)

per one hundred (100) pounds of coal burned at the boilers, no allowance for ashes, friction or any wastes to be allowed. It was further stipulated that the above quantity of water should be delivered when two-thirds the boilers furnished were supplying steam to the engines, and that the duty should be based on the water delivered, as determined by weir measurement.

MANNER OF CONDUCTING THE TRIALS.

Local conditions rendered it inexpedient to run both engines at once, during the trials. It was decided to test each engine separately, for a period of twentyfour hours.

Since a boiler test could not be made in conjunction with a duty and capacity test without lowering the temperature of the feed water (in transit through weighing tanks), each engine was tested in exactly the conditions which maintain in every-day service,

Very satisfactory facilities for gauging the water delivered by the pumping engines had been provided. A weir flume of ample length, having a cross section eleven feet wide by seven feet deep, was provided at its entering end with gratings to insure an even flow of water in the flume, and a weir notch with carefully prepared metallic knife edges at its exit end. A vernier hook gauge, located in a box at one side of the flume, indicated the height of water on the weir

notch. All precautions, as recommended by Mr. James B. Francis, were observed in connection with the weir measurements, and Mr. Francis' formulas were used in the computations.

In ordinary service the water pumped by the engines is delivered directly into the city mains. During the tests, communication with the city mains was shut off, and the water delivered to the measuring flume, from which it passed over the weir notch, to a launder emptying into Lake Michigan.

Since the measuring flume was below the engines, in order to create an artificial head for the engines to pump against, a gate valve in the delivery main, near the engine-house, was partially closed, until a throttling resistance corresponding to a total head of about 150 feet was obtained.

In the beginning of the first trial nearly an hour elapsed before the resistance and engine speed could be adjusted conformably to the conditions of the contract. Hence, the capacity of the (west) engine should be based on the time during which it was running under normal pressure and speed. The duty, of course, is figured for the whole time. The (west) engine was run, however, more than twenty-four hours, under normal conditions.

Of the six boilers in the battery, two, Nos. 1 and 2, were used throughout the tests, and these had been under steam for several days prior to the trials,

In consequence of the peculiar conditions under which the engines were compelled to work, it was decided best to make a running start.

The first trial was with the west engine Oct. 24, 1887, and was conducted as follows: With the engine running, the fires under boilers Nos. 1 and 2 were quickly hauled, and the grates cleaned, the steam for keeping the engine running coming mainly from boiler No. 3, which was under steam. Kindling wood was quickly placed under boilers 1 and 2, the wood being charged to the experiment as equivalent to four-tenths (0.4) its weight in coal. At the instant the fire was lighted boiler No. 3 was shut off, time was taken, 2:29 P. M., and the test began. The engine counter was taken, steam pressure and height of water in the boilers carefully noted. At the close of the trial, after the last firing, when the steam pressure had fallen to the point at which it stood when the fires were lighted, the water level in the boilers being also the same as at beginning of trial. The trial was closed at 3:59 P.M., October 25. The fires were immediately hauled, with the intention of picking out any unburned coal, but not enough remained unburned to make any account of. The steam pressure in boiler No. 3 was kept below that of the boilers supplying steam to the engine.

The trial with the east engine began Oct. 26th, and was conducted as follows: With the engine running,

the fires under boilers No. 1 and 2, supplying steam to the engine, were allowed to burn low, and when it was decided to commence cleaning the fires, time was taken, 11:35 A. M., and the test began. The engine counter was taken, steam pressure and water level in the boilers recorded. The fires were then cleaned, all coal added being charged to the experiment till the close of the trial, when, after the last firing, the fires were brought as nearly as could be judged to the same condition as at the beginning, the steam pressure and water level in the boilers being also the same. When it was decided that the fires needed cleaning, time was taken, 11:40 A. M., October 27th, the engine counter taken, and the trial declared closed.

It was predicted that the east engine would show the higher duty, and the tests verified this.

The coal was weighed in iron barrows, on a small platform scales, 300 lbs., net, at each barrow-full. During the trials the scales were sealed by the local Sealer of Weights and Measures.

The coal used was clean "egg" anthracite, such as is supplied to the city water works.

Two observers were in constant attendance in the boiler-room to look after the coal.

Two observers were also in attendance at the weir, where observations on the hook gauge were made every ten minutes. A metallic float gauge, inclosed in a gauge box in the pump well, indicated the water level in the latter. The zero of this gauge was carefully referred to the center of the pressure gauge in the force main.

The steam temperature was indicated by a thermometer screwed into the steam pipe near the engine.

The force main pressure gauge, and the thermometers, were prepared specially for these tests.

Observations were made, as to the quality of the steam, with a barrel calorimeter. These observations indicated dry steam. The thermometer in the steam pipe showed about 4. degrees super-heat.

Observations were made every fifteen minutes on the engine counter, pressure gauges and thermometers in the engine and boiler rooms.

A few sets of indicator diagrams were taken, to obtain an idea of the steam distribution, but more particularly to ascertain the friction of the engine and percentage of useful effect. The friction was thus ascertained to be 7.64 per cent., and the efficiency 92.36 per cent.

It is to be borne in mind that the duty, as required by the contract, and as given in the tables, is figured on the weir measurement. If figured on plunger displacement, as is customary, the mean duty for both engines would have been about 103,072,000. foot pounds. The necessary data for determining the steam used per indicated horse power, was obtained during the boiler trial, to be described hereafter.

The tabulated results for the second trial of the west engine, which was run during the boiler trial, are merely incidental. The drop in the duty during the second trial is due solely to the lowering of the temperature of the feed water from 181. degrees to 148. degrees. Making the proper correction for this loss of temperature (caused by the feed water standing in the measuring tanks) the west engine, for the boiler trial, should be credited with a duty of 100,277,000. foot pounds:

TABULATED RESULTS.

	WEST ENGINE.	WEST ENGINE.	EAST ENGINE.	WEST ENGINE.
	Neglecting First 57 Min.	Whole Time.		Boiler Trial.
Duration of Trial (Hours)	24.55	25.50	24.08	12.283
Revolutions, total	27,505.	28,480.	27,084.	13,682.
Revolutions per hour	1,120.87	1,116.86	1,124.59	1,113.90
Revolutions per minute	18.673	18.614	18.743	18.565
Piston speed in feet, per minute-				
Actual		128.51	123.46	128.19
For 12,000,000 gals. per day	118.2	***************************************	118.3	
Displacement, gals. per revolution	480.5		478.6	***************************************
Average head at weir, feet		0.8191	0.8189	0.8162
Velocity of approach, feet per second		0.2411	0.9411	0.2411
Head at weir, corrected for velocity of ap-				
proach, feet		0.830	0.81978	0.81708
Water pumped, cubic feet per second	***************************************	19.378	19.368	19.274
Water pumped, U. S. gals., per hour	524,028.	521,810.	521,543.	519,008.
Water pumped, U. S. gals., per day	12,576,752.	12,528,464.	12,517,032.	12,456,192.
Water pumped, U. S. gals., total	12,864,882.	13,306,181.	12,560,494.	6,374,975.
Water pumped, U. S. gals., per revolution	467.74	467.21	464.88	465.93
Loss of action, or "slip," per cent	3.659	2.766	8.105	8.029
Mean force, main pressure, pounds	***************************************	59,843	59.397	60,872
Mean force, main pressure, feet head		188.237	187.21	189.460
Mean height from gauge to water in pump well		13.649	14.072	14.018

158,470 53,173,666. 8,160,562,531.		8,400.		97,149,554.	827.98	79,96	94.45	4,51	62.61	104.68	123.86	161.08	148.04	51.36	25.51	80.03	78.68	51.95	552.	7,848.	6.57
15,849,163,862.		15,450.	· continu	102,583,585.	325.99	79.09	93.58	8,18	Not Taken.	98.74	110.54	180.79	180.79	Not Taken,	26.40	10.08	75.57	88.58	1,202.5	14,247.5	7.78
988	120.	16,500.	.050617	98,928,108.	Thermom, deranged.	79.88	***************************************	seems or a seem	61.65	98.65	115.25	181.21	181.21	52.81	26.30	80.11	74.7	32.36	1,267.	15,778.	7.48
Mean total head against pump, feet	300 lbs. kindling wood, at 0.4 lbs.		Duty in pounds of water raised one foot per	100 lbs. coal. Averages—General.	Steam temperature at throttle, deg. F Thermom, deranged.	Steam pressure at throttle, by gauge	Steam pressure at throttle, absolute	Steam, degrees of super-heat	Steam pressure in low pressure jackets	Feed water temperature at hot well	Feed water temperature before passing heater	Feed water temperature after passing heater.	Feed water temperature as it entored boilers	Injection temperature	Vacuum, inches of mercury	Steam pressure at boilers	Engine room temperature	External air temperature	Ashes and clinker, total lbs	Combustible, lbs	Per cent, of ashes in coal,

In the following table, column (1) gives the indicated horse-power by five sets of indicator cards taken from the steam cylinders of the west engine. Column (2) gives the simultaneous horse-power in water pumped, as per weir discharge. Column (3) gives the horse-power by the plunger travel against the total head. Columns (4) and (5) give the per cent, of indicated horse-power utilized, being the ratios of columns (2) and (3) to column (1).

The difference between the averages of columns (1) and (3), viz: 28.5 horse-power, is the friction of the engine, which, at that speed, would remain practically constant for varying heads, so that for any other head the duty of the engine can readily be calculated. Thus, for a head of 300, foot the duty would be increased 3.6 per cent. But this is only approximately correct, as, under increased head increased steam pressure and cylinders would be necessary.

WEST ENGINE.
INDICATED AND EFFECTIVE HORSE-POWER.

	Horse-Power	i.	Per Cent. of I. HP. Utilized.			
Indicated.	Weir Discharge.	Plunger Travel.	Weir Discharge,	Plunger Travel.		
373.36	335.96	345.58	89.99	92.56		
877.25	340.80	348.06	90.34	92.26		
375.93	338.05	346.48	89.92	92.17		
369.90	333.04	341.97	90.04	92.45		
369.19	332.77	341.08	90.14	92.39		
Averages. 373.13	336.12	344.63	90.08	92.36		

BOILER TRIAL.

The test of boilers No. 1 and 2 was conducted in precisely the same manner as with the trial of the east engine, and in addition, the feed water was weighed. With the (west) engine running, the fires under boilers No. 1 and 2 were allowed to burn low, and when it was decided to commence cleaning fires time was taken, 10:23:30 A. M., October 28th, and the test began, the steam pressure and water level in the boilers being carefully noted. The fires were then cleaned, all coal added being charged to the experiment, until after the last firing. The fires were brought as nearly as possible to the same condition as at the beginning, the steam pressure and water level being also the same. When it was decided the fires needed cleaning time was taken, 10:40:30 P. M., October 28th, and the trial closed.

Incidentally, all observations in the engine room and at the weir were made during this test as during the others.

Excellent facilities were provided for weighing the feed water. The feed water was pumped (by the feed pump, driven by the main engine) into an elevated tank, No. 1. As needed, the feed was drawn from tank No. 1 into a weighing tank, resting on platform scales, each charge weighing about 2,000 pounds net. From the weighing tank the water passed into tank

No. 3, and from the latter pumped into the boilers by an independent steam pump supplied with steam from boiler No. 6. The pressure in boiler No. 6 was kept below that in boilers No. 1 and 2.

In order that the resistance against the pumping engine should be the same as if it were pumping the feed water directly into the boilers, as during the other trials, a throttling valve was placed in the feed pipe between the pumping engine and tank No. 1, and adjusted so that the resistance against the pump equaled the boiler pressure. (See column 19 of the engine room log for October 28th.)

Columns 25 and 26 of boiler room log for October-28th, give the overflow from tank No. 1, as measured by a Worthington Meter. This overflow is the water pumped, by the feed pump at the engine, in excess of the boiler requirements.

RESULTS OF BOILER TEST.

Duration of trial, hours	12.283
AVERAGE PRESSURES.	
Steam pressure in boilers, gauge, lbs	80.02
Steam pressure in boilers, absolute	94.51
Atmospheric pressure, barometer, inches, mercury	29.50
Draught, force of, inches of water	. 652
AVERAGE TEMPERATURES.	
Feed water, degrees F	148.72
Steam, at engine throttle, F	327.98
Fire room	66.7
External air	51,9

ENGINEER'S REPORT.

FUEL.

Anthracite coal consumed (assumed to be dry), lbs	8,400.
Ashes and clinker from grates and ashpits, lbs	552.
Per cent. of ash in coal	6.57
Combustible, lbs.	7,848.
Coal consumed per hour.,	683.8
Combustible consumed per hour	638.9
· · · · · · · · · · · · · · · · · · ·	
FEED WATER.	
Water pumped into boilers and apparently evaporated, lbs	82,774.5
Equivalent evaporation into dry steam from and at 212° F, lbs,	91,335.4
Equivalent British thermal units derived from fuel82.	The state of the s
Equitalent Division therman units derived from the control of the	200,000.
ECONOMIC EVAPORATION.	
ECONOMIC EVAPORATION,	
Water evaporated, per pound of coal, at observed temperatures	
and pressures, lbs	9.854
Equivalent evaporation, per pound of coal, when working under	
normal conditions, viz.: with feed water at 181° instead of	
148.7°, lbs	10.169
Equivalent evaporation, per lb. of coal, from and at 212° F, lbs,	10.873
Equivalent evaporation, per pound of combustible, lbs	11.638
COMMERCIAL EVAPORATION,	
Equivalent water evaporated, per pound of coal, with one-sixth	
refuse, from feed water at 100° F, into steam at 70. pounds,	
gauge, Ibs	8.436
Par Pol	0.100
RATE OF COMBUSTION.	
KATE OF COMBOSTION.	
Coal burned per hour per square foot of grate, lbs	13.026
Coal burned per hour, assumed with one-sixth ash, per square	
foot of grate, lbs	14.604
Coal burned per hour, assumed with one-sixth ash, per square	
foot of water heating surface, lbs	0.2664
Coal burned per hour, assumed with one sixth ash, per square	
foot of least area for draught, lbs	133,11

RATE OF EVAPORATION.

Water evaporated per hour, from and at 212° F, per square foot	
of heating surface, lbs	2,584
Water evaporated per hour, from feed at 100° F, into steam at	
70 pounds, gauge, per square foot of grate, lbs	123.2
Water evaporated per hour, from feed at 100° F, into steam at	
70 pounds, gauge, per square foot of heating surface, lbs	2.247
Water evaporated per hour, from feed at 100° F, into steam at	
70 lbs., gauge, per square foot of least area for draught, lbs.	1,122.9
COMMERCIAL HORSE POWER. (ONE.)	
On basis of 30 pounds water per horse power per hour, evapor-	
ated from feed at 100° F, into steam at 70 pounds, gauge,	
horse power	107.76
COAL AND WATER PER HORSE POWER PER H	OUR.
Coal burned during boiler trial, lbs	8,400.
Coal which would have been burned if feed water had been 181°	
instead of 148.7°, lbs	8,139.5
Effective horse power of west engine for whole time of boiler	
trial, figured on weir measurement	335.54
Net horse power of same, by plunger travel	344.04
Indicated horse power of same	372.5
Coal burned per hour (8,139.5 ÷ 12.283), lbs	662.66
Coal burned per hour, per indicated horse power	1.779
Coal burned per hour, per net horse power	1.926

Your committee take pleasure in stating that the performance of the engines and boilers is, in their opinion, eminently satisfactory, both the duty and capacity being in excess of the guarantee; the mean

6,738.95

18.091

19.58

Water per hour, lbs.....

Water per hour, per indicated horse power, lbs.....

Water per hour, per net horse power, lbs.....

duty for both engines being over 6 per cent. in excess of the requirements of the contract.

In conclusion, we beg leave to express our thanks to the contractors, to officials at the City Hall, and particularly to Mr. T. T. Johnston, of the City Engineer's Office, for courtesies and valuable assistance.

Very respectfully,

ROB'T H. THURSTON, J. S. COON, JAS. N. WARRINGTON. CITY OF CHICAGO,
DEPARTMENT OF PUBLIC WORKS,
February 25, 1888.

Hon. GEO. B. SWIFT,

Commissioner of Public Works.

DEAR SIR:—Less than thirty days have expired since I was placed in charge of the Water Works System of Chicago, and I have not yet had sufficient time in which to investigate, so as to make an exhaustive report.

I have visited the different pumping stations and observed the working of the machinery. The four compound beam engines at the West Side pumping works are comparatively new. The boilers are said to be in good order, and the work performed seems to be satisfactory. As soon as possible I will make tests and submit a report in detail.

The Fullerton avenue and Canal engines are doing their usual work, and I did not think it important that tests should be made at once.

At the North Side Chicago avenue pumping station I found a very bad state of affairs, and have devoted most of my time to making investigations at these works. All the engines, except the new Gaskill engines, are old, having been built in the years 1853, 1857, 1867 and 1872.

The two single-beam engines of 1853 and 1857 are now run every day, but they are stopped for a few

hours each night, when the demand for water is not as great as during the day time. These engines, the 1853 and 1857, have done much service, and need a thorough overhauling if they are to be continued in use, but more modern engines would work with greater economy. I would say, however, these engines were up to the standard when they were built.

The small double-beam engines of 1867, usually called the North Engines, had been repaired, and the work was about finished when I arrived here, and I had no time to examine them before they were started again. These engines work now daily. They have steam cylinders 44 inches diameter, with 8 feet stroke, and double-acting water pumps, originally 28 inches diameter, 8 feet stroke, but having been re-bored lately they now measure: on the north engine 28% inches diameter, and on the south engine 28% inches diameter.

Indicator cards taken of these engines, since their repair, show that the steam cylinders perform the following work:

Engines running at 9.5 revolutions per minute, or 153 feet per minute:

						HORS	E POWER
North	Engine,	bottom	of o	cylinder		 	57.63
u	-	top	46	- 11		 	27.14
		Diffe	eren	ce		 ,, ,	30.49
95		both sid	des	togethe	r	 	84.77

но	RSE POWER
South Engine, bottom of cylinder	66.27
" " top " "	39.37
Difference	26.90
" both sides together	104.64
Grand total	190.41
At another time the engines were making	14 revo-
lutions, or 224 feet per minute, piston speed:	
	ORSE POWER
North Engine, bottom of cylinder	108.87
" " top " "	74.80
Difference	34.07
" both sides together	183.67
South Engine, bottom of cylinder	131.54
" " top " "	86.73
	11.01
Difference	44.81
" both sides together	218.27
Grand total	401.94

The difference between the power applied to top and bottom of steam cylinders is due greatly to the unequal balancing of the two ends of the beam, the air pumps being located on the cylinder end of the beam. The cut-off on the valve gear has to be adjusted to make the engines run even, but the main reason is that the large valves in the valve chambers of the pumps are of a faulty construction. The suction valves do not close quick enough; they float, and much water is lost in this way, because a great part of the water in the pump barrel floats back into the well through the suction valves, until the current of the water through the valves helps to close them, and then only the balance of the water is discharged into the water mains.

Supposing the pumps are working right without losing any water, the pumps of the North Engine, having 656 square inches area, at 9.5 revolutions per minute, or 153 feet of speed, against a head of 112 feet, or 56 pounds, with 20 per cent. only added for friction, would need 204 horse power. But the power used is only 84.77, as the indicator cards show,—a loss of 119.53 horse power, or 58.53 per cent., because the work cannot be performed without the necessary power to do it; or the engine should have done 140 per cent. more than it did at that speed.

The South Engine, having only an area of 633 square inches in the pump, should use 198 horse power, but the cards show only 105.64 horse power,—a loss of 92.36 horse power; or both engines together are supposed to perform, at 9.5 revolutions per minute, 402.3 horse power, while the cards show 190.41 horse power,—a loss of 211.89 horse power, or 52.74 per cent.; or engines should have done 110 per cent. more than they did at that speed.

The same engines sometimes have a higher speed, 14 revolutions per minute; and, at that speed, the

н	ORSE POWER
North Engine should show	299:1
South " " "	288.0
Both	587.1
While the cards only indicate	401.94
A loss of	185.16

or 31.71 per cent.; or the engines should have done 46 per cent. more work at 14 revolutions per minute.

The engines go through the motion as if they were performing a large amount of work, but they do not do it. The above figures show about what they are doing. This can be remedied at small expense, and I recommend that these engines be changed as soon as large 1872 engines are running.

The largest engine, the double-beam engine of 1872, at the south end of the building, was working when I came, but only for a few days, or until the small double-beam engine of 1867 was ready to start. A small defect in the vacuum, caused by leaky valves on the air pumps, hastened the decision to shut down, and the next morning the work of taking the engine apart for repairs was commenced.

Nothing but the usual amount of wear and tear on the valve motion and on the connections of the engine was found. The rubber valves for the air pumps needed to be replaced by new ones. The pump valves for the service pumps were in good order, and perfectly tight. By examining the pumps I found the pump barrels of both of them cracked from top to bottom, and in several places. A new inside cylinder or sleeve inserted in each pump in sections. The original diameter of the pumps was 57 inches; now they are 54 inches. The space between the new cylinder and the old cracked pump cylinder is filled with sulphur, and the inside cylinders are held in position by set screws. A small iron band is clamped around the broken cylinders. The sleeve is held in place by a ring over the top and bottom, with rods running the whole length of the pump. I cannot, without going into a thorough examination of facts connected therewith, find out positively when the pumps burst, or when they were repaired.

When these large beam engines (1872) were new, double beat valves of brass were furnished; fifteen valves for the suction of each pump, twelve valves of the same size for discharge valves, there being no valve in the bucket. The valves were constructed in the usual way; lower diameters of valves, 15% and 16% inches (outside and inside diameter of seat); upper diameters of valves, 12% and 14 inches; each valve having 30.15 square inches of ring surface for lifting, and 89.875 square inches for floating or resisting to close; each weighing 75 pounds in air, or 66 pounds

when submerged in water; requiring nearly 2 pounds of vacuum per square inch for lifting, if there had been no head of water in the well to help lift. These valves, a number of which are yet stored at the station, could lift originally 21 inches high, while 14 inches would pass all water which the clear opening of the base would admit, and less lift would admit plenty of water to fill the pump. These valves probably worked noisily, but well enough to fill the demand, or to do their duty. They were, however, for some reason condemned, and (1876 or 1877) new valves were put in these pumps, which made matters worse. These new valves, which are yet in the pumps, are also double beat valves, of cast iron, with wooden seats. The clear opening of the fifteen suction valves is 657.9 square inches less than in the old brass valves. or 28.4 per cent, smaller; 110.07 square inches against 153.93 square inches in each valve. Each valve has lower diameters 17 % and 15 % inches, and upper diameters 10% and 81% inches; or a ring area of 90.57 square inches for lifting and 175.67 square inches for floating, against 89.875 on the old brass valves. Each valve weighs 122 pounds in atmospheric, or 105.12 pounds under water, and requires only 1.16 pounds of vacuum for lifting, against 2 pounds on old valves. The weight to close the valves was in this proportion: For old brass valves 0.73 pounds per square inch; for new iron valves only 0.59 pounds per square inch,

and comparing the clear openings upon top of the valve bell, the old valves have 184.15 square inches on bottom of ring and 90.36 square inches clear opening on top, or as 100 to 49. The new valves have 178.19 square inches on bottom of ring, and only 39.93 square inches clear opening on top for the water to pass through in settling down, or as 100 to 22.4.

This large ring area, with only 0.59 pounds per square inch weight for closing, acts like a parachute, and keeps the valve suspended or floundering in the water instead of letting the valve seat quickly when the bucket of the pump arrives at the top of its stroke, and this caused the valves to seat heavily after the pump bucket has started on its down stroke, the current of water passing through the valves backward, carrying the valve down with force. It would seem from examination of official reports which I have collected and attached hereto, that serious trouble commenced after these new valves were put in, and some remedy was sought after.

The air was brought into requisition. At first a small pump was employed, according to official reports—I quote only those referring to the 1872 engines.

I found at the North Side works several air pumps, and as I never had seen a regular air compresser used to supply air in such quantities in the valve chamber of a service pump, I commenced at once to investigate. There are three air compressors now in the basement of the North Side pumping station. One duplex double acting machine, with two air cylinders 91/2 inches diameter, 8 inches stroke, which was running at a speed of 80 revolutions per minute, furnishing 181.450 cubic inches, or 105 cubic feet of air at atmospheric pressure; another air pump with two cylinders, which at 40 double strokes can furnish about 30 cubic feet of air per minute; and a third steam pump which was used, and is yet used, to pump dry the well in which the pumps are placed. This pump had a new pump cylinder put on, so as to pump air for the valves on the big engine when it was not used for pumping water. This pump can furnish over 40 cubic feet of air very easily per minute. Either one of these latter pumps was always worked together with the duplex double acting air compressor, so that the amount of air furnished ranged from 135 to 148 cubic feet per minute.

I searched in the annual reports of the Public Works, and as near as I can gather from these official yearly reports of the engineer, the supply of air was gradually increased from time to time. I desired to know the reason why it was necessary to pump so much air into the pumps of these engines.

I know on all pumping engines a small quantity of air is required to keep the air chamber on the discharge pipe supplied with air, as the air under pressure somehow works out of the air vessel and causes the engine to thump. This air can be easily introduced through a small pipe with check and regulating valve on the suction side of the pump, but it is also a fact, that in cases where air enters the valve chamber with the supply of water, which is often the case where closed suction pipes are used, a quiet working of the pump and valves is impossible. Sometimes a small force pump is supplied to force air into the air chamber direct on the discharge pipe, if the amount of air gets too small to furnish the necessary air cushion. If the pumps take solid water, and the valves are made in such a way as to automatically adjust their lift, necessary to let the water follow the bucket and close gradually by the time the bucket is at the end of the stroke, the valves will make no noise, and the pump will do its full duty. On double beat valves the difference between the lower and upper valve faces should be as small as possible, enough only to let the vacuum, formed by the bucket moving away from the valves, lift the weight of the suction valves easily, so the water will or can enter through the valves. The weight of the valves must be great enough to act continually, to seat the valves as soon as the speed of the bucket diminishes, in as short a time as possible to prevent any thumping of the valves, and to prevent any loss of water running back through the valves. About 1878, the new double air compressor was put to work,

and all the air wanted was supplied. What was the effect of introducing air into the pumps at the suction end? The apparent effect was: the pumps worked easier, the valves worked perfectly quiet, and everybody probably was happy, But the West Side pumping station had commenced pumping by that time, or a defect in quantity of water would have been easily detected. Let us see how it worked. The valves have each a lifting area of 90.57 square inches, and weigh 105.12 pounds under water. It requires only 1.16 pounds per square inch to balance or to lift them. The water in the well outside the pump chamber stands about 8 to 10 feet above the suction valves; therefore, it exerts 4 to 5 pounds of pressure per square inch to lift the suction valves, while there is only 0.59 pounds of weight per square inch to hold them down. The valves would open without the vacuum caused by the bucket rising and let the pump fill nearly to the level of the water in the well, but that is also the cause of increasing the laziness of the valves in closing to prevent the water from escaping into the well again.

The air from the air compressors was now introduced right under the pump bucket in the valve chamber, under a pressure of 10 to 12 pounds above atmosphere; but as soon as the bucket ascends, this air, 11664.5 cubic inches of atmospheric air for every up stroke of the bucket, expands, and of course keeps

as much water out of the pump barrel as this air occupies space under the existing pressure. The suction valves open now to admit water, but the pump barrel cannot fill on account of the air. The valves flounder or hang suspended in the water, having only 0.59 pounds per square inch to close them. The bucket descends and compresses the air slowly, or pushes the air which is filling the pump barrel, down again. A part of the water, occupying the lower part of the valve chamber, escapes again through the yet open valves, and the valves close only slowly during the increasing velocity of the bucket on its down stroke. No jarring on account of the air cushion above it, and its slowly increasing compression. The air is now further compressed and escapes or is forced into the mains through the delivery valves with some of the water until the bucket comes to its lowest position. A new stroke commences, more air is coming in at 10 to 12 pounds of pressure above atmosphere, and the same operation is repeated as before. The actual loss of water can only be guessed at, but the loss of the capacity of the pumps is immense.

This has been going on for ten years, from 1878 to 1888. If the engine had been pumping water with its 54 inch diameter bucket against a head of 112.5 feet, going at the rate of 10 revolutions, with 10 feet stroke, the indicated horse power of the engine for that work should have been about 932 at least. The

cards taken from the engine show only 614 horse power, or 318 less than the work supposed to have been performed; in other words, the work supposed to have been performed by the pumps was greater than the power actually employed. Should not this have been a reason for investigating to ascertain how this was possible?

Indicator cards taken from the big engine, just before stopping, show:

		но	RSE POWER
North	engine,	top of cylinder	89.3
**	"	bottom of cylinder	178.73
		Difference	89.43
- 61	**	both together	268.03
South	engine,	top of cylinder	130.0
41	"	bottom of cylinder	216.0
	*	Difference	86.0
	11	both together	346.0
*		Grand Total	614.03

Some years since the buckets of the pumps were reduced from 57 inches to 54 inches diameter after the pumps burst, but the plungers were left the same as they were originally before the accident—40½ inches diameter. This difference of 131 square inches of plunger area from what it should have been

requires about 26.6 horse power more to displace that amount of water on the down stroke of each pump. But instead of that the cards show 89.43 more horse power on the north engine, and 86.0 horse power more on the south engine on the bottom side of the piston, which indicated that there must have been something wrong in the working of the pumps, the difference of 112.6 and 116.43 horse power being too large to be accounted for by any unequal balancing of the working part of the engine, as the air pumps are on the opposite end of the beam from the steam and pump cylinders.

The down stroke of the north (1872) engine should show 262.0 horse power while the cards indicated only 89.3 horse power, a loss of 172.7 horse power, or 66 per cent; or the engine should have done 193 per cent. more work than it did. The up stroke of the same engine should show 255.7 horse power while the cards indicated 178.73 horse power, a loss of 76.97 horse power, or 30 per cent; or the engine should do 43 per cent. more work. This loss is accounted for partly by the compressed air forced under the bucket, which helps to lift the bucket, instead of steam power under the piston; but the power spent to lift the column of water on top of the bucket is spent uselessly, as the same water, or the greater part of it, follows the bucket down again on the down stroke. It is not forced into the mains. The loss of water

is as great on the up stroke, as the percentage of power lost on the down stroke of the bucket. Besides the power spent to compress the air and force air into the mains which was of no use whatever.

I understand complaints have come in frequently of lack of water in upper stories, no head of water, noise in the pipes, and it is even officially stated that a loss of 12 pounds of pressure exists between the pumping station and the immediate neighborhood of the tower after the water has passed the stand pipe.

The pamphlet "Preliminary Report of the Drainage and Water Supply Commission of the City of Chicago," of January, 1887, page 40, contains a diagram showing the water pressures in the Chicago water mains, December, 1886; and it shows a decidedly lower pressure in the pipe after the water has passed the tower. Investigating this, the Assistant Engineer stated to me that he had made an experiment in the tower by lowering into the open stand pipe a light. which was extinguished when it came within 15 or 20 feet of the water level. "You see," he said, "if there was any air coming with the water, the light would burn." Now, just the contrary is the case. A great part of the air pumped with the water through the pumps, when passing below the stand pipe, escapes through this stand pipe, forming at the top a perfect spray, which rises so high that no light can burn in that spray within 15 or 20 feet of the real water level.

I am informed by men at the Works that a few years since the tower was frozen, and this explains how it was done. The balance of the air in the water is forced into the mains, and escapes through the faucets, hydrants, and other connections, and causes that disagreeable splurting of the water when faucets are opened; and the water is milky-white when drawn, on account of the quantity of air in it, getting clear when it stands a while, and the air escapes. The engineers at the Works say: When the tower was thawed out by fire-pots the escaping air and spray at the top, also the trembling of the tower was noticeable for hours, and after the air had escaped the former state was resumed, (The city pipes contained more air than water.)

A few minutes after I arrived in Chicago I opened the faucet over a wash-basin in my room at the hotel, and the water was sent all over by the force of the air behind it. After I had collected some in the basin the water looked perfectly white, but it soon got clear. Examining some water drawn from the faucet into a glass, I saw the air bubbles escape. The same thing happened in the morning, and during the day I made my first visit to the North Side Water Works. When I saw there the air compressors in full operation, the mystery was explained at once. This compressed air in the pipes exerts the same pressure on the gauge showing the head of water, as if it was

water; but as soon as the air, or a part of it, has escaped, that amount of pressure equal to the escape of air, is gone, and that accounts for the loss of head when the water has passed the tower. The head at the North Side Station is false. The water west of the tower cannot rise to the upper stories, since it is deprived of twenty-four feet of height by the loss of the escaped air, and subsequently reduced pressure.

I see in the reports for last year: "This double engine ('72') has been credited with running 8,6741% hours last year, and with making 4,686,987 revolutions, pumping, at 2,245 gallons per revolution, 10,522,285,815 gallons. From observations recently made and reported, it appears that this estimate is very much too large; and from later observations our mechanical engineer, Mr. J., is doubtful if the engine is adding much, if anything, to the city's water supply. It is most unsafe to hazard any estimate of the actual effectiveness last year."

This beam engine, "'72," in its present condition, developing 614 horse power, used about 24 tons of coal in 24 hours, which, at the price paid, \$6.25 per ton, makes \$150.00 per day; and for the whole of last year's run of 8,674 hours, or 361 days, \$54,150.00, and for the time the engine has been in this condition, say nine years, in that proportion, \$487,350.00, for which very little value has been received. These

figures do not include salaries of firemen and engineers, and other expenses connected therewith.

Having stopped the engine for general repairs, I propose to make changes so as to increase the supply of the city. This engine has been used for years, doing only 614 horse power. I am in doubt about working this engine to its full capacity with the outside pump cylinders of the pumps burst, and having bushings of only 1½ inch thickness inside, with sulphur backing. When we start to pump water, using 932 horse power, the pump cylinders may not stand the strain, and must be operated with care. If it should be found necessary to remove the pumps, a long stoppage of the engine would be required, besides an expense of from \$40,000 to \$50,000.

I shall require the engineers in charge of the different stations to take indicator cards from their engines running, every day if possible, and send duplicates to the Chief Engineer's office for record. The indicator cards of an engine tell the true story of its condition.

The duplex pumps for the City Hall plant of elevators, and the engines for the electric lights at the same place, are reported "all right."

Some more working tools may be required for the machine repair shops at the North Side, to keep up with the demands on account of hydrants, meters and engines. I have gone more fully into the explanation of the difficulties at the North Side Pumping Station than I intended, but I thought the importance of the matter required that everything be made as plain as possible.

I also find in the basement of the North Side Pumping Works two large Knowles direct acting steam pumps, said to be of three millions capacity each. These pumps are never used. I find in the reports that they were put in to be used in case of repairs, but as they took steam full stroke, and are not in any sense economical, the boilers could not supply sufficient steam to run these in connection with other engines that would be necessary to supply the required quantity of water. Whatever expense was incurred in connection with these pumps must be considered a total loss, unless the pumps can be removed from this station and utilized elsewhere; and if removed, it is a question whether they are of any particular value for use by the city. In any event, they could not be used by the city unless they were compounded at an expense of from \$3,000 to \$4,000; and if compounded, they would work nearly as economically as any of the low-pressure engines now in use at the North Side Works. The total cost of these pumps, with connections and foundations, must have been at least \$8,000, and you can find this by referring to the books and official reports.

I have made no statement as to the Gaskill engines for the reason that the experts who tested them for the city have not yet made their official report. These pumps seem to be working well and doing good service for that kind of pump.

Yours respectfully,

F. W. GERECKE,

Engineer in Chief, Water Works.

CITY OF CHICAGO,
DEPARTMENT OF PUBLIC WORKS,
February 25th, 1888.

EXTRACTS FROM OFFICIAL REPORTS.

1874. Page 35. About the 1872 Engine: "Sand caused considerable damage to the metallic packing in the pumps, etc. These were the only repairs of note since the completion of the engine, which has given entire satisfaction."

1875. Page 39. "By referring to the table on page 32 it will be seen that the south engine (this 1872) has been in operation over 90 per cent. of the entire time since the date of last report, and has pumped over 80 per cent. of the whole quantity of water consumed in the city, etc. * * * Although the operations of this engine, while performing so large a proportion of the work, have proved entirely satisfactory, especially in regard to stability and smoothness of action, without the slightest accident or undue wear, etc." * * *

1876. Page 37. "The south engines have been in continuous operation 91 per cent. of the time during the past year, pumping more than seven-eighths of the total quantity of water. The pumps of 1867 engine at present writing are being fitted with new valves, which will be completed in the course of two or three weeks."

1877. Page 45. "Engine 1872 received pretty general overhauling during January and part of February last. Both working beams were taken out of pillow blocks in order to fit new keys in the main journal shaft. Other repairs were made upon the pumps, a portion of the foundation, and wherever necessary." * * * "The apparatus has been devised for the purpose of introducing an air cushion in the main water pumps. This device has proved very satisfactory in its operation, relieving the engine of any jar or concussion whatever." * *

"After repacking and cleaning the engine referred to it was started on 17th of February, 1877, and has continued to run night and day to date of this writing, March 31st, 1878."

1878. Page 40. "This south engine, 1872, has been in operation 287 consecutive days and nights, etc." * * *

"The two double engines at the North Works and the two single engines at the West Works are in reality the main reliance of the city for water." *

Page 41. "Early in the year a new air compressor was connected to the engines for the purpose of creating a suitable air cushion in the pumps for the purpose mentioned in the last reports."

1879. Page 33. "The thorough refitting of the pumps of 1872 engine, referred to in last annual report, was completed in June last, and has proved a

great improvement. The engine was started soon after, and has continued in operation day and night since that day, working in the most satisfactory manner, and at present time is in prime condition. No accident or breakage of any kind has occurred during the past year."

1881. Page 33. "The operation of North Works has not been interrupted during the year from any cause—the pumping machinery is in good order."

1882. Page 57. "The south 1872 engines have pumped over two-fifths of all the water delivered from these works, and have been running 343 days, having stopped about 18 days for overhauling." *

In 1883 "The south 1872 engines have pumped over five-eighths of all the water in 353 days in the year." In 1885 "The south, or 1872 engines, have been in continuous operation, except one or two stoppages of a few hours duration, from May 6th to November 25th." In 1886 "The engine has been in operation 361 days, etc." * *

COMMENTS.

Referring to the report of 1877, page 45, in referrence to engine "1872," the report says: "An apparatus has been devised for the purpose of introducing an air cushion into the water pumps," etc. It would appear that this apparatus consisted of an air pump for forcing air into the valve chamber between the suction and discharge valves, and from investigations it also appears as if they considered it too small, and please note that former reports state that "all worked well and satisfactory;" also please note page 40, report 1878, where it says: "This south engine, 1872, has been in operation 287 consecutive days and nights, etc.," and judging from prior reports this engine has been in operation night and day a large portion of the time since 1872.

The statement is also made: "That the two double engines at the North Works and the two single engines at the West Works are in reality the main reliance of the city for water."

Notwithstanding these reports, on page 41, report of 1878, "A new air compressor was connected to the engines," and in report of 1879, page 33, "A thorough refitting of the pumps of 1872 engine," it is stated, "was completed in June last and proved a great improvement." And so on down to 1886.

I do not find anything mentioned anywhere of the accident that must have happened to the pumps of the 1872 engine sometime during the years quoted above. Nor do I find any explanation as to what caused the breakage, or any statement as to the probable cost of putting in new pumps, or the cost of repairs, or any estimate of the depreciation in value of the machinery in consequence of the breakage. In talking with the engineers I find that some are

inclined to the belief that these pumps were broken when they were tested and overtaxed by the tests made by the Citizens' Association; and it is also stated that the cracks were not discovered for a long time, and not until City Engineer Chesbrough insisted that the pumps be shut down for investigation, and it was then discovered that extended repairs were necessary. Of this I find no report. The only way that I can explain the accident to the pumps is that they took air suddenly, either through a leak or by low water in the well, and the bucket hit the water in mid stroke. It must have been done in both pumps at the same time, because both pumps are burst in identically the same way.

F. W. GERECKE,

Chief Engineer of Water Works.

VESSEL DISPATCHER'S REPORT.

GEORGE B. SWIFT, Esq.,

Commissioner of Public Works.

Sir:—I herewith present you my report as Vessel Dispatcher for the past season of Navigation, commencing with the Telephone System, August 12th, and ending December 11th, 1887.

There has been no record of the number of vessels passing through the various bridges, nor the time occupied for each swing, excepting at Clark and Madison streets, for two months previous to the adoption of the telephone system. From this record I am led to believe that this system has reduced the time of opening and closing nearly one-half, thereby affording a great convenience to the public.

The number of arrivals and departures (per Custom House Report) in the Chicago River, was 21,748, being larger than any year since 1882. There are not so many vessels engaged in the grain trade as in former years, but they are a great deal larger, and mostly steamers, and therefore make more trips durng the season of navigation.

I would state that the Telephone System has been of great service to the public in many ways. It has reduced the time of swinging the bridges, saved the bridges from many collisions, thereby saving time to the public; it has nearly, if not fully, suppressed the whistle nuisance and has been of great service to the harbor masters in preventing and clearing up the jams and blockades in the river.

We have called the Patrol Wagon for the recovery of dead bodies in the river, seven (7) times; for the arrest of drunk and disorderlies, ten (10) times; for the removal of persons injured along the river, eight (8) times, and have reported still alarms of fire to the Fire Alarm Office, three (3) times.

The Telephone System is of great service to bridgetenders in reporting their wants as to the necessity of repairs to bridges, and also saves the bridge carpenters many trips as to the material needed to repair the same.

A law compelling masters of large steamers to employ the use of a steam tug to assist in passing through the bridges would greatly lessen the time of keeping the bridges open and would materially aid public traffic and travel.

There are now in winter quarters, in the Chicago River, three hundred and thirty-one (331) vessels, of which seventy-nine (79) are steam, and two hundred and fifty-two (252) are sailing vessels. The grain carrying capacity of these vessels exceeds that of any fleet since 1880, by over two millions (2,000,000) of bushels.

There came into commission forty (40) new firstclass steamers, of the largest size, during the year 1887, the majority of which are so large that when loaded it is impossible to get them down the river without causing the public great delay, on account of their great draft and breadth of beam.

As there is no law regulating the loading of these vessels, in former years vessel men used the depth of water on the Washington street tunnel as the standard to load by.

I would respectfully recommend that Section 985 of the Municipal Code be revised, so as to read:

"During the hours between six o'clock in the morning and twelve o'clock midnight, it shall be unlawful to keep open any bridge within the city of Chicago, for the purpose of permitting vessels or other craft to pass through the same, for a longer period at any one time than ten minutes, at the expiration of which period it shall be the duty of the bridge-tender, or other person in charge of the bridge, to display the proper signal and immediately close the same, and keep it closed, in order to allow all persons, teams and vehicles in waiting to pass over said bridge."

By amending Section 985, so as to read as the above section, it will give the vessel dispatcher or bridgetender the authority to hold vessels more than ten minutes to allow the accumulated traffic and travel of the street to pass over such bridge.

I would respectfully recommend that the Telephone System be extended to include South Halsted street bridge, for the following reasons, viz:

Having no telephone connection with bridges south of Twelfth street, it frequently occurs that the bridge located at this point is opened to allow one vessel to pass north, while other vessels are also moving north between South Halsted and Twelfth streets. There being no telephone report of the movement of these vessels, they are allowed to pass, making two or more openings of bridges from Polk to Wells street, when, with the extension of the system as proposed, one opening of the bridges would answer for all such vessels.

I would also recommend that an order be issued to regulate the operation of pleasure steamers coming from the lake as far as Clark and Wells street bridges, to prevent their winding around before landing (to land head up), as they are always accompanied by more or less other vessels proceeding up the river. Their winding stops these vessels and frequently delays State, Clark and Wells street bridges, and consequently the traffic.

I would report that at this writing there is no adequate system of signals between bridge-tenders and pilots on the Chicago River, and I herewith submit the following code of signals which has been shown and explained to many prominent pilots, superintendents and managers of the various tug and steamboat lines navigating the Chicago River, and has met their approbation:

CODE OF SIGNALS.

- 1. Red light, pass in.
- 2. Green light, pass out.
- 3. Red and green lights, pass both ways.
- 4. Neither light up, stop.
- 5. The lower lights now in use to remain as they are.

Red and green balls to be used from sunrise to sunset, in the same manner. Bridges having operators to be governed by the same signals from the office, when the bridge is open.

I would further recommend the removal of the Vessel Dispatcher's office from its present location, on account of its being so public and noisy in the season of navigation, as there is at all times one or more of the Anchor Line steamboats at the dock, which prevents our seeing the bridges, and also that the Anchor Line company is building a large warehouse which will totally shut out our view of Wells street bridge. I would suggest that the telephone office be

removed to the fire-boat station, at the foot of La Salle street, on the south side of the river. By building an additional story on the fire-boat station it would give the harbor masters a permanent head-quarters, as the duties of harbor master and vessel dispatcher are closely allied.

I would also recommend that the ashes and cinders from the steam bridges be hauled away instead of being dumped into the river, as each of the bridges uses from four (4) to six (6) tons of coal per week, and that the sweepings that accumulate on the bridges be carted away by the party who has the contract for cleaning the streets, instead of being thrown into the river by the bridge tenders, and filling the draws of the bridges.

I would also suggest that the Vessel Dispatcher be given authority to pass a vessel to her elevator after 5.00 p. m., to enable her to save storage, as sometimes it occurs, that by holding one from 5.00 to 7.00 p. m. compels them to forfeit from \$200 to \$500, whereas if they get to the elevator by 6.00 p. m. it would save that amount of money to the ship, and would not be of such vital importance to traffic, in my opinion. Also, to pass a vessel to her dock of discharge or to dry dock, if in a leaking or sinking condition, if in my judgment, it is abolutely necessary to do so.

	Cubin	our to		2000	DAWNOT BET	Sea minoral	and proper	VIOG	U.M. WILL	may July
	KUSH.	CLAKA.	WELLS.	LAKE.	KANDOUPH.	MADISON.	VAN BUREN.	LULA.	AINZIE.	UHI. AVE.
Total time open	erHrs.	Hrs.	.arH §	enH ;	, at H is,	Hrs.	enH's.	Hrs.	enH s	Hrs.
Total No. of ves-	28	2	1 3	1	1	1 6	-	14	200	74
Total No. of	3,146	2,675	2,610	2,730	2,749	2,692	2,642	2.576	4,870	1,544
Average No. of vessels per day	6143	603	59%	511%	50%	503	204	20	57	18
swings per day	308	26%	258	268	27%	263	259	25%	43	15
Average No. of vessels per swing	63	21/3	31%	1112	188	1138	123	117	13	111
Average time con-	Min.	o Min.	o Min.	o Min.	o Min.	o Min.	o Min.	o Min.	o Min.	o Min.
Average time open per swing.										
Average time open	11 40	10 4	10 30	8 27	10 30	8 10	6	9 44	9 27	3 6
Per cent. of time bridge was closed for public.	8000	200	8) 62 60	85.1	158	86.8	84%	837	841%	946
Per cent. of time bridge was open for	111	16.1	17.7	1419	15	1811	15.4	162	1537	51%

REPORT OF THE VESSEL DISPATCHER'S OFFICE,

.niM es AVE. 48 56 2,007 Sec. 874 OIII. SHrs. miM es 03 M FROM AUGUST 12 TO DECEMBER 10, 1887. —BETWEEN THE HOURS OF 9.00 P. M. AND 8.00 A. miM ? 33 21 6,853 KINZIR. 68 892 108 25 Hrs. miM es 00 9 miM 88 7六 Sec. 55 46 5,915 111% 883% 58 POLK. 33 SHrs. .niM co 9 VAN BUREN. 36 .niM % Sec. 35 6,178 80% 89.8 1047 17% 849 SHrs. .niM co 8 * Sec. 57 48 .niM = MADISON. 6,253 13% 90°8 216 851/3 613 STH S .niM es 00 10 RANDOLPH. Min. Sec. 16 80 8,369 62 1/2 13% 801 104 35 ETH \$ miM & 4 8 Sec. 18 .niM S 58 90 P 6,411 916 LAKE. 639 844 .21H 24 miM 26 10 8 S Sec. .niM 22 7,842 WELLS. 86% 18% 883% 769 STH SS niM cs 10 00 S. Min. 88 Sec. 30 7,984 87.8 1244 28,2 CLARK. 384 78% S Hrs. miM es -.niM co 43 Sec. 57 8,361 45% RUSH. 149 854 g Hrs. miM os 00 sels per day....Average No. of swings per day. Average No. of vessels Average time open per bridge was closed for Per cent, of time vessels, Total time open during 102 days..... passed through Total No. of swings ... per swing. Average time open per hour..... Per cent. of time bridge was open for Average time con-Total No. of vessels Average No. of ves-

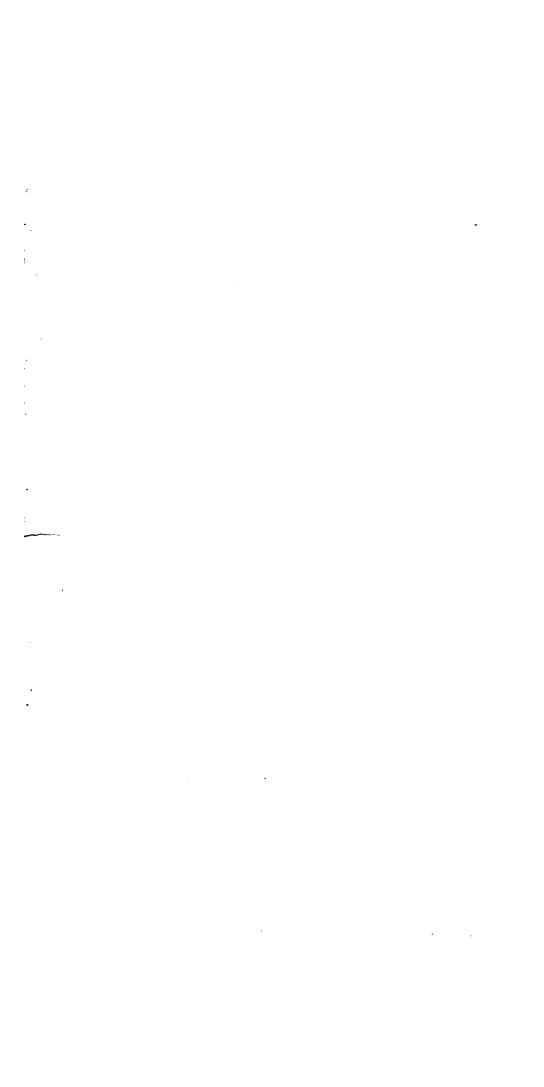
YEAR.	ARRIVALS.		CLEAI	RANCES.	TOTAL.	
IEAK.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
1883	11,203	8,555,586	11,271	3,743,574	22,474	7,299,160
1884	10,518	3,481,957	10,640	3,489,666	21,158	6,971,623
1885	9,846	3,347,647	9,910	3,364,169	19,756	6,711,816
1886	10,180	3,546,309	10,267	3,594,549	20,447	7,140,858
1887	10,828	8,868,465	10,920	3,989,615	21,748	7,858,080

The above is a statement, as shown per Custom House report, of the arrivals and clearances, with their tonnage, since 1883.

Respectfully,

JOHN C. WECKLER,

Vessel Dispatcher.



WATER OFFICE REPORT.

CHICAGO, January, 1888.

HON. GEORGE B. SWIFT.

Commissioner of Public Works.

SIR:—I have the honor of submitting to you the Annual Report of the Water Office for the municipal year terminating December 31, 1887.

When I assumed the duties of Superintendent on May 1st, last, I found that the records had not been fully kept. Inefficient help, lack of discipline and jealousy existed in each department, which by your aid and counsel was soon removed.

The change made by you, in removing the Assessors, Draughtsmen and Permit Department from the Water Office, proved very beneficial, giving despatch and relieving the Water Office of those three subdepartments and enabling clerks to be more rapid and correct.

Annexed to, and being part of the report, will be found statistical tables giving information as to the operations of this department and sub-departments.

STATEMENT WATER COLLECTIONS

JAN., 1887, TO JAN., 1888.

Months.	By Assess- ments.	Meters.	Assessor's Miscell'ous.	Drains.	Water Permits.	Totals.
January	\$48,588 64	\$33,559 60	\$345 50	75 00	157 70	\$82,726 44
February	20,813 20	34,710 98	71 09	450 00	375 60	56,430 8
March	13,577 91	45,543 99	137 75	1,587 50	1,186 80	62,033 98
April	7,365 12	47,856 37	1,214 48	2,575 00	2,051 10	61,062 07
May	246,242 55	33,376 32	2,417 30	1,640 00	1,534 60	285,210 77
June	127,894 24	31,890 64	3,591 23	2,272 50	1,384 80	167,033 41
July	58,981 49	58,227 09	2,154 33	1,827 50	1,368 30	122,558 71
August	50,028 73	42,682 80	2,585 50	2,405 00	1.762 40	99,464 48
September	17,603 99	40,567 31	2,241 23	2,210 00	1,587 80	64,210 33
October	25,482 78	43,239 90	1,201 03	2,315 00	1,712 90	73,951 61
November	232,498 34	42,929 92	76 66	2,030 00	1,594 70	279,129 62
December	124,416 80	45,094 87	146 00	1,072 50	1,191 50	172,521 67
Totals	\$973,493 79	\$500,279 79	\$16,182 10	\$20,460 00	\$15,908 20	\$1,526,323 88

Assessments	\$973,493.79	
Meters	500,279.79	
Assessor's Miscellaneous	16,182.10	
Drains	20,460.00	
Water Permits	15,908.20	
		\$1,526,323.88
Twenty-Fifth Ward Assessment		2,620.52
Twenty-Fifth Ward Water Permits		45.50
Twenty-Fifth Ward Drains		112.50
Total Receipts, 1887		\$1,529,102.40
Total Receipts, 1886		1,408,755.85
Increase		120,346.55

Expenses of the Collection, Assessor's and Inspector's Departments, which are the three principal departments of the Water Office:

Expenses Collection Department, 1886	\$59,038.89	
Expenses Assessor's Department, 1886	12,484.88	
Expenses Inspector's Department, 1886	36,231.40	
Total	- 30.70	\$107,755.17
Expenses Collection Department, 1887	\$57,571.14	
Expenses Assessor's Department, 1887	12,047.68	
Expenses Inspector's Department, 1887	32,722.26	
Total		\$104,341.08
Decrease		\$3,414.09

"Section 528, page 168, of the Municipal Code, provides that the Comptroller shall require all officers, charged in any manner with the receipts, collection or disbursement of the city revenues, to make monthly statements in writing under oath, showing in detail all such receipts, collections and disbursements, and file the same in the office of the Comptroller."

This has been complied with from the first of May, since I was appointed Superintendent, and which was never before complied with in this department.

About the tenth of December I ordered forty new ledgers for the use of the Collection Department.

They are now in the hands of the book-binders and will be completed on or about January 15th, 1888.

As soon as possible clerks will be put at work making copies of our present ledgers. It will require three months of labor to make the copies and foot them up so that the amount of assessment from May, 1888, to May, 1889, can be ascertained.

The balance due on the assessment for the year ending May, 1888, is \$132,041.97, and I hope to clean this up very close by May 1st.

I also ordered twenty-two new registers for the Meter Department; these are completed and in the hands of the clerks.

The registers for the Meter Department have to be renewed only once in four years, while the ledgers for the Collection Department last only one year.

I desire to particularly call your attention to my special report made to you of the amount of work devolving upon the Assessor and that department, and of the condition of the plat books which form the foundation for water service pipe assessment, that six volumes were destroyed during the great fire of 1871, and the twenty-one volumes saved had only the record of pipes put in since 1868, that the old plat books are in a very dilapidated condition from their constant use and if means are not taken to secure the valuable records they now contain by finishing up the new maps (partially drawn) the loss and inconvenience to this department will be incalculable.

The increase of business necessary to be done every day has retarded the accomplishment of the completion of new plat books. You have granted two additional draughtsmen which will help the department towards completing this desirable work, and as new territory comes in as part of the city new plat books and tracings will have to be prepared and will need two additional draughtsmen to keep business up to the requirements.

I desire also to call your attention to my special report of the "Sub-Permit" Department under Mr. Napier, giving full statistics of the work and especially of the New Mueller Screw Tapping Machines, substituted about the 1st of September, for the old style tapping, the work of which has been very satisfactory, and safer, no complaints that ferrules have blown out, and in that respect showing marked contrast to the many former complaints from that service.

In view of the large extent of territory comprised within the limits of the city, I recommend that you take into consideration the policy of establishing substations in the outlying districts, for the purpose of granting the public better facilities for paying water taxes. Reports to be made at general office every morning before 10 A. M., where all records shall be kept the same as though transacted at water office.

These stations can be located in some police station or fire engine-house; collections can be made without much additional cost, thus saving valuable time and expense to water tax payers.

The time for payment of water tax in my opinion is

too limited (being now 15 days for each district of the months of May and June, and November and December), for water takers to avail themselves of the discount of 12½ per cent. and causing great rush at water office during this short period.

I would therefore recommend that the semi-annual payment should cover a period from the 1st day of May to the 31st day of October, and from the 1st day of November to the 30th day of April in each and every year, making four water districts, as follows:

First District. Embracing all the South Division of the city, comprising the 1st, 2nd, 3rd, 4th, 5th and 6th Wards, also 25th Ward.

Second District. Embracing the North Division of the city, comprising the 20th, 21st, 22nd, 23rd and 24th Wards.

Third District. Embracing all that portion of the West Division of the city comprising the 7th, 8th, 9th, 10th, 17th, 18th and 19th Wards.

Fourth District. Embracing all that portion of the West Division of the city comprising the 12th, 13th, 14th, 15th and 16th Wards.

Taxes due and payable as follows:

First District. During months of May and November, respectively, each and every year.

Second District. During months of May and November, respectively, each and every year.

Third District. During months of June and December, respectively, each and every year.

Fourth District. During months of June and December, respectively, each and every year.

If time is extended as noted, it will give 30 days in each District instead of 15, to water-takers, to avail themselves of the discount of 12½ per cent., and save rush of tax-payers at Water Office, and facilitate business in the office.

Carrying out these views, I hand you herewith an amendatory ordinance which, if it meets your views, can be sent to the Council for adoption.

The question of an ample water supply to meet requirements is now the all-absorbing topic. The great waste of water which causes scarcity of pressure in upper stories was less the past year than ever before. Inspectors and Leak and Waste force were more prompt in enforcing the ordinance against this waste, but, notwithstanding all the Department could do, it could not be entirely suppressed. Nothing short of a large force like the Police can prevent this waste.

During the months of July and August our Leak and Waste force delivered 3,000 notices to stop waste of water, and in many cases enforced ordinance by shutting off.

We have what is termed "Leak and Waste," "Shut Off," and "Stop Cock" shut off forces.

These were formerly under three foremen, salary \$900 each, but were in July put under supervision of J. C. Folz, at a salary of \$1,200.

Previous to May 1st, I find no record of the work of the Leak and Waste, Shut Off, and Stop Cock shut off forces. Since that date I have had record kept and reported as herewith. I have utilized these forces in sending them out with bills of Water Department, which has materially assisted in prompt payments and collections.

MONTH.	Bills Delivered.	Shut Off Notices Delivered.	Shut Off for Unpaid Taxes.	Notices of Leak and Waste.	Shut Off for Leak and Waste.	Complaints Investigat'd
May			16	1,200	47	
June		*******	15	1,750	34	
July	2,100	1,800	4	1,400	90	
August	5,700	4,600	139	1,941	84	131
September	4,000	3,800	229	959	37	136
October	3,400	3,100	214	435	40	131
November			9	214	29	109
December	4,421		1	429	36	84
Totals	19,622	13,300	627	8,328	397	591

There is also a force for Locating Stop Cocks. This force was under two foremen, at salary of \$900 each. On the 1st of July they were placed under John Southwick, at a salary of \$1,000, who has fifteen men under him.

These men are divided into gangs, and when the Council passes an order for a street to be improved, the tracings of all lots on the line of property ordered to be improved are given to Mr. Southwick, and he proceeds to dig up the pipes and find out if they are

the proper pipes required by ordinance, and making a correct report of all pipes in, and what lots are not supplied, so that a correct assessment of pipes needed may be made.

In some instances this work is very laborious, as in the great fire of 1871 the records of the locations of pipes were burnt, and a new record has to be made from Mr. Southwick's reports.

In addition to this regular work he is required to examine and report all pipes, when there is a dispute in regard to location, and settle the question of the pipes being iron or lead, which in some cases requires digging to the depth of 13 feet, and more in some localities, where streets have been raised.

The stop-cock force of 10 men is used for shutting off water at stop-cocks or taps, where leaks occur or where there are broken pipes.

Where extensive digging is necessary, charges are made against property for that work.

The duties of Water Inspectors, and qualifications required, is referred to in my special report of Water Inspector's Department under Mr. Nickerson.

The draughtsmen are now at work making plat books and tracings for the 25th Ward, preparatory to water assessment from May, 1888, to May, 1889, under the present city ordinance.

With this additional territory to look after it will readily be seen that the expenses will largely increase. There was a large amount of water assessment for frontage rates (where no water is used) being carried along from year to year on books of the Water Office, also erroneous assessments, which we have been endeavoring to clear up by going to County Records, finding owners, notifying same of these assessments, and by compromise have reduced the amount materially, and getting same in shape so annual collections can be made.

We find also by carelessness of Inspectors, that assessments have been made against vacant lots and carried along on books. These we have taken off the books by rebate.

Our books are now kept so that at the end of each month, (or oftener if required) we can show amount delinquent.

The clerks in the Collection Department take pride in keeping their books clean and in good order, as any business house's books, a marked contrast to old books.

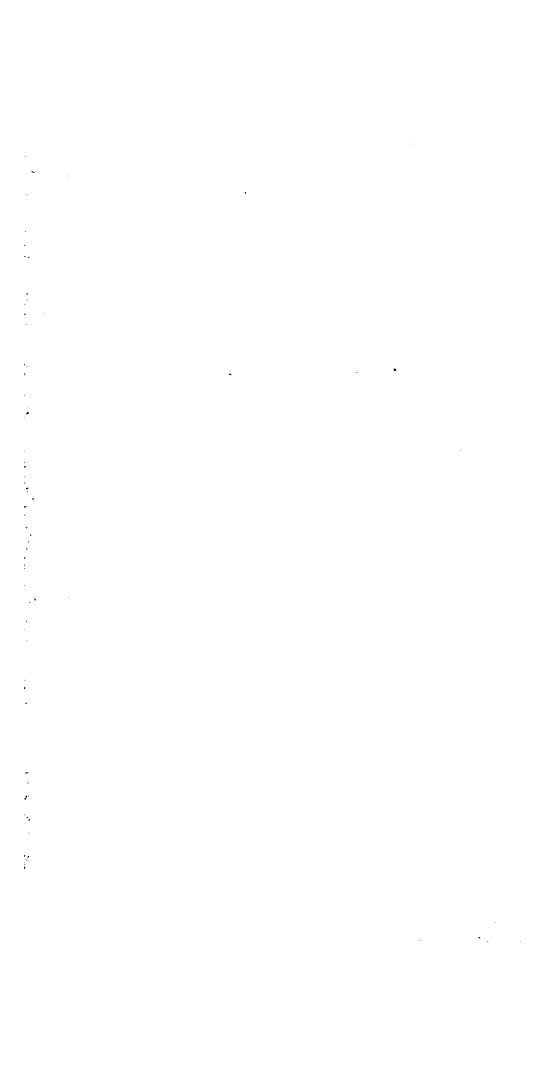
It has been the aim of the Superintendent and Chief Clerk to render personal aid to taxpayers, in having their bills properly adjusted through the Assessor, and to see that order and discipline is preserved in every department.

The Water Department of this great metropolis is nearer to the people than any other branch of the city government can possibly be, and it should be the great aim of the authorities to render to its patrons all the facilities that can be devised, so that it will not be a burden upon the people.

Respectfully submitted,

T. N. BOND,

Superintendent.



ASSESSOR'S SUB-DEPARTMENT,

WATER OFFICE.

Hon. GEO. B. SWIFT,

Commissioner of Public Works.

DEAR SIR:—I herewith present you special report of the work done by the Water Assessor's Sub-Department of the Water Office, for the year ending December 31st, 1887, showing the amount of work devolving upon the Assessor, Mr. Pattison, and that Department.

Amount on Division Books Ja	nuary 1st, 1887	\$988,604 44
Amount of Increase from Jan-	Amount of Decrease from Jan-	
uary 1st, 1887, to April 30th,	uary 1st, 1887, to April 30th,	
1887, as per Assessor's	1887, as per Assessor's	
checks No. 1502 to 1858.	checks No. 1393 to 1705.	
checks No. 1002 to 1656.	Checks No. 1895 to 1705.	
January, 1887\$2,967 05	January, 1887\$4,850 01	
February, 1887 2,613 59	February, 1887 2,581 10	
March, 1887 2,343 61	March, 1887 3,962 24	
April, 1887 1,971 07	April, 1887 1,951 40	
Total \$9,895 32	Total \$13,614 75	
Increase	\$13,614 75 9,895 32	3,719 43
	., 1887	\$984,885 01
Amount of Miscellaneous Janu	uary 1st, 1887	\$14,969 25
INCREASE.	DECREASE.	
January, 1887\$ 153 59	January, 1887 \$ 48 50	
February, 1887 13 75		
March, 1887 1,262 73		
April, 1887 1,816 17		
Total	Total \$455 80	
	100000	
Increase	\$3,246 24	
Decrease	455 80	
		\$2,970 44
Total amount of Miscel	laneous April 30th, 1887	\$17,759 69

Increase from May 1st, 1887, to
December 31st, 1887, as per assessment check No. 2 to 2598.
day, 1887. \$40,558 40 une, 1887. 13,328 71 uly, 1887. 19,757 50 dugust, 1887. 18,356 30 deptember, 1887. 14,229 76 October, 1887. 10,952 99 November, 1887. 8,027 86 December, 1887. 7,568 52
Total\$132,780 04
Increase
Total increase
Total amount from May
MISCELLANEOUS INCREASE.
May, 1887. \$2,288 94 June, 1887. 5,618 36 July, 1887. 129 33 Jugust, 1887. 2,325 50 Jugust, 1887. 2,106 72 Jugust, 1887. 1,029 91 Jugust, 1887. 422 32 Jugust, 1887. 109 86
Total\$14,030 94
200000000000000000000000000000000000000

Amounts rebated by ordinance of November 21st, 1884, and July 30th, 1885, during the year ending December 31st, 1887.

Municipal and public schools	\$15,944	61		
Religious, charitable and educational institutions	12,361	11		
By special order of Council, February 4th, 1887	173	50		
By special order of Council, June 3d, 1887	74	50		
Back tax by Ordinance July 30th, 1885	5 71	50	\$28,553	72
Back tax by Ordinance November 21st, 1887	317	54	389	04
			\$28,942	76

This is included in General Statement of Decrease. The amount reported as "Miscellaneous" is made up of charges for the use of Water outside of the regular assessments, such as sprinkling streets, flooding skating rinks, filling gas tanks, wastage of water, etc., etc., and does not appear on the division books, but is kept in a miscellaneous register for that purpose.

Our annual examinations for water rates are conducted by thirty-six Inspectors constantly employed in house to house examination, the reports of which they return to this office in small books giving the location of each house, with its width in feet, stories in height, how occupied, together with all fixtures for the use of water; these books are first compared with the plat books by a draughtsman, and the location of buildings verified or entered; the book is then passed over to a clerk who compares it with the assessment on the division books, making them to correspond

with the Inspector's report by increase or decrease of any item omitted or overcharged, entering such item with the amount on the Inspector's book. The book is then passed to another clerk who enters up the items thus marked, on increase or decrease checks as the case may be; three or four clerks are constantly engaged on this work, and two clerks are constantly engaged in adjusting water bills for the people when paying their water rates; this adjustment of bills is caused by the frequent changes of occupancy of buildings and too frequently by careless Inspectors.

WATER SERVICE PIPES CONTRACTED DURING THE YEAR ENDING DECEMBER 31st, 1887.

Assessor's Cost.		22 50 18 00 18 00		13 50 37 50 19 50	100000	S. C. St. C. F.	ACCOUNTS NOT THE PARTY.	CE SEC.	onen o	
Amount of Contract.		60 68 241 28 210 34		139 07 488 64 164 45						
Pipes put in.	292 8	4555	8 6 8 8	@ 15 E	1080	189	30 83	11 6 8	820	16
CONTRACTOR.	J. Hogan D. & J. Hardin Ryan Bros	Ryan Bros Ryan Bros. Ryan Bros.	C. Breyer. Ryan Bros I. Hogan	Ryan Bros.	Ryan Bros Gunderman Bros	J. Halloren C. Breyer Gunderman Bros.	J. H. Roche Ryan Bros.	Ryan Bros.	J. H. Hogan	P. Saunders
TO	Arbor pl. Western ave.	nue .		ive	drive	North ave	ave		it.	Wood st
FROM	Carroll ave Chicago river North ave	Canal st	Weston ave Ashland ave Twelfth st	Milwaukee aveFlournoy st.		Division st. Lincoln st. North ave	L. S. & M. S. R. R Throop st	Milwaukee ave.	North Centre ave	Centre ave
STREETS.	Ada st. Archer ave. Burling st.	Barber st. Blackhawk st. Brigham st.	· ·	Cleaver st	f				Fry st.	Fifteenth st

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Assessor's Cost.			28 20		164 00				21 00					39 00	
Amount of Contract.	The state of the s	150 80 11 98		State or	4000				-				200	898 12	000
Pipes put in.	19	10	18	6.14	111	30.	63	52	14	16	16	97	16	26	18
CONTRACTOR.	D. J. Hardin	J. Halloren	J. Halloren.		D. J. Hardin	J. Garvey	Ryan Bros	C. C. Breyer	J. Halloren.	J. Garvey	J. H. Roche.	J. Garvey	I. Garvey	J. H. Roche.	J. Halloren.
то	Twenty-second st	Laylor st. Wright st. Ashland ave.	Indiana st.	Cottage Grove ave	Egan ave.	inus		Wood st.			Wentworth ave			vard	
FROM	Fourteenth st	Fourteenth st	Randolph st	Vincennes ave	Douglas ave	Hoyne ave			ave	Ashland ave	State st	Wood st	Ashland ave	State st	Huron st
STREETS,	Morgan st. 8 pipes put in last year	Newberry ave	Peoria st	Prospect pl	Prairie ave	Pratt st.	Robey st.	Shober st	st		I wenty-third st	Thirteenth st	Thirteenth pl	Thirty-seventh st	

195 69 19 50 72 998 54 97 50 11 70 0 50 50 10 11 70 0 50 50 11 70 0 50 50 11 70 0 50 50 50 50 50 50 50 50 50 50 50 50	\$64,867 50 \$5,541 61	3,956 \$64,867 50 \$5,541 61
25 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3,988	8,956
Webster ave Halsted st Clybourn ave A. H. Watson Wright st. Halsted st Western terminus J. Garvey Wood st Twelfth st. Redzie ave Ryan Bros Walnut st. Arbany ave Kedzie ave Ryan Bros Wells st. Division st J. Halloren Wood st. North ave Ryan Bros Wallace st. Archer ave Ryan Bros Wallace st. Thirty-first st. J. H. Roche. Wallace st. Sedgwick st. Larrabee st. D. & J. Hardin Winthrop pl. California ave. Homan ave. J. Halloren. Warren ave. Harrison st. Twenty-second st. D. & J. Hardin Vork st. Laffin st. Ashland ave. D. & J. Hardin	Pipes laid last year, 24 on Wabash avenue from Harrison street to Twenty-second street, and 8 on Morgan street from Fourteenth street to Twenty-second street	

Every pipe in the foregoing statement of contracts has been reported to the Assessor by the Plumbing Inspectors and carefully examined, and compared as to length of pipe and locality, and the Plumber's bills also compared with Inspector's report before being certified by Assessor, to the Superintendent of Special Assessments, for final vouchers to the Contractors, which is the amount shown for contracts, less bill of taps; vouchers of taps and Assessor's cost are issued to credit of the Water Fund.

The following streets ordered for improvement have been examined and returned to Special Assessment Department for water service pipes during the year 1887.

STREET.	FROM	то	ESTIMATED.		
SIREEI.	FROM	10	Pipes.	Amount.	
Ayers ct	Huron st	Chicago ave		*******	
Artesian ave	Lake st	P. C. & St. L. R. R.	15	\$368.70	
Armour st	Chicago ave	Egan ave	12	277.80	
Albany ave	Madison st	Colorado ave			
Alexander st	Wentworth ave	Stewart ave	30	682.40	
Ashland Ave	Chicago River	Egan ave	251	6,546.30	
Bismarck ct	Noble st	Eastern terminus.	35	642.50	
Belden ave	Cleveland ave	Halsted st			
Blackhawk st	Sedgwick st	Halsted st	49	1,203.65	
Burling st	Webster ave	Belden ave	20	503.70	
Butterfield st	Thirtieth st	Egan ave	60	1,510.00	
Bickerdike st	Indiana st	Chicago ave			
Boston ave	Desplaines st	Halsted st			
Bradley st	Holt st	Elston ave	13	340.55	
Belden ave	Halsted st	Perry ave	97	2,324.75	
Brown st	Wright st	C. & N. W. R'y	27	665.75	
Blue Island ave	Viaduct	Twenty-second st			
California ave	Madison st	Fulton st	42	1,015.20	
Campbell ave	Polk st	Twelfth st	43	900.85	
Cleaver st	Bradley st	Blanche st	11	261.25	
Crosby st	Division st	Larrabee st	72	1,793.30	
Congress st	Western ave	Campbell ave	9	183.60	
Cicero	Congress st	Harrison st	16	333.00	
Chase	Chicago ave	Cornell st			
Calumet ave	Thirty-first st	Douglas ave	3.300		
Colorado ave	Madison st	Jackson st	107	2,665.15	
Cork st	Ashland ave	Paulina st	12	234.90	
California ave	North ave	Milwaukee ave	248	5,560.35	
California Ave	Milwaukee ave	Fullerton ave	28	720.80	
Clinton st	Milwaukee ave	Kedzie ave			
Dania ave	Division st	North ave	88	2,191.20	
Desplaines st	Lake st	Van Buren st	23	752.10	
Eleventh st	Morgan st	May st	23	752.10	
Ellis ave	Douglas ave	Egan st	29	714.80	
Emerald ave	Twenty-sixth st	Twenty-ninth st	13	309.20	
Emerson ave	Leavitt st	Oakley st	20	425.60	
Erie st	St. Clair st	600 feet east	21	657.75	
Emerson ave	Wood st	Leavitt st	88	2,167.00	
Fay st	Erie st	Pratt st	4	99.20	
Flournoy st	Western ave	Campbell ave	18	404.00	
Flournoy st	Campbell ave	Rockwell st	26	637.10	
Ferdinand	Noble st	Armour st		001.10	
Fourteenth st	Indiana ave	Clark st			
Fulton st	Rockwell st	Kedzie ave	193	4,676.40	
Fourth ave	Harrison st	Twelfth st	100	2,0,0,20	
Franklin st.	North ave	Menominee st	24	568.80	
Fremont st	Centre st	Belden ave	37	906.05	
Fremont st	Willow st	79	46		
			40	2,100.10	

empere	PROM	700	ESTIMATED.		
STREETS,	FROM	то	Pipes.	Amount.	
Franklin st		North ave	47	\$1,246.45	
Green st	. Madison st	Harrison st			
Gurley st	. Blue Island ave	Center ave			
Gross Terrace	. Madison st	Colorado ave			
Homan ave		Lake st	36	813.60	
Hammond st	. Wisconsin st	Menominee st			
Harmitage ave		Twelfth st	79	1,910.80	
Hudson st	63.8 A TO THE RESERVE OF THE RESERVE	North ave	8	218.40	
Harrison st		The river	12	309.60	
Hoyne ave	40.45	Chicago ave			
Halsted st	. Clybourn ave	Fullerton ave			
Irving ave	47 7	Harrison st	28	676.80	
Jefferson st	Sixteenth st	Twenty-second st	-	010100	
Johnson st		Twenty-second st	36	917.00	
Jane st	Milwaukee ave	Ashland ave	00	011.00	
		Central Park ave.	156	4,179.00	
Jackson st		Halsted st	17	340.50	
Kramer st			36	890.60	
Kendall st		Taylor st	90	500.00	
Kinzie st	. Canal st	Jefferson st	90	000 00	
Loomis st		Twenty-first st	39	998.00	
Leavitt st		Chicago ave	27	565.65	
Lexington ave		Campbell ave	6	140.00	
Lessing st	. Chicago ave	C. & N. W. R'y	3	141.30	
Lake st	. Western ave	R. R. track	18	470.70	
Lake Park ave		Thirty-first st	30	612.00	
Locust st		Western terminus.	12	297.60	
Laurel st	. Thirty-first st	Egan ave	270	6,586.80	
Lytle st		Macalister pl			
Lincoln st	. Wells st	Center st	16	405.60	
Michigan ave	. Jackson st	Chicago ave	39	998 00	
Monroe st	. Robey st	Oakley ave	13	351 90	
Miller st	. Harrison st	Polk st			
Madison st	. Western ave	Rockwell st	4	82 86	
Marshfield ave		Twelfth st	82	2,055 00	
Market st	. Schiller st	North ave	21	431 70	
Marvin pl	. Division st	Ellen st	24	553 40	
Milwaukee ave		California ave	174	5,128 20	
Ohio st		Lincoln st	55	930 00	
Ontario st	. St. Clair st	600 ft. east	26	750 60	
Oak st	North Clark st	Dearborn ave			
Ogden ave	ALC: N. A. V.	California ave	120	5,289 30	
Orchard st		Fullerton ave	141	3,448 40	
Osgood st	. Center st	Belden ave	53	1,292 40	
Park ave	. Falls ct	California ave	49	1,239 40	
Paulina st		Armitage ave	75	1,820 40	
		Western terminus.	6	166 20	
Pratt pl.,	. Madison st	Van Buren st	4	99 20	
Peoria st			52	1 1 1 1 1 1 1 1 1	
Pratt st.	. Halsted st	Morgan st	02	1,163 60	
Park ave	Leavitt st	R. R. track		909 70	
Polk st		Fifth ave	9	203 70	
Pine st		Chicago ave	6	157 60	
Paulina st		Twelfth st	90	2,249 60	
Pratt st	. Morgan st	Sangamon st	14	408 80	

companyers	FROM	TO	ESTIMATED.		
STREETS.		то	Pipes.	Amount.	
Park ave	. Wood st	. Lincoln st	13	\$333 9	
Plum st		. Laffin st		-	
Rose st	C38 X	. Cornell st			
Rumsey st			21	555 4	
Rush st	. Chicago ave	. State st			
Rush st	Illinois st				
Shober st			23	574 2	
St. Clair st		. Ontario st			
Stanton st		. Lake st	7	185 1	
Sibley st		. Macalister pl	5	102 2	
Seymour st			79	1,990 0	
Snell st	. Chicago ave		6	148 0	
Samuel st			37	959 4	
Superior st		. Robey st	27	665 7	
State st	. Chicago river		16	442 8	
Sherman st	. Polk st	. Taylor st	33535	********	
seminary ave		Fullerton ave	72	1,808 7	
Welfth st	. Ashland ave		203	6,150 9	
wenty-second pl			28	605 3	
Thirty fourth st		. L. S. & M. S. R. R.	*****		
Iwenty-fourth pl.		. Hanover st	35	879 6	
Ullmann st	. Thirty-first st	. Douglas ave	110	2,812 7	
Vedder st	. Division st	. Larrabee st	24	606 7	
Vernon park pl			36	910 4	
Wabansia ave	. Ashland ave		91	2,083 5	
Wieland st	. Schiller st		15	383 5	
Walnut st			168	4,087 2 5,053 0	
Western ave	. North ave		201	1010000	
Winchester ave		Twelfth st	241	2,331 2 6,801 3	
Western ave	. Ogden ave	. Twenty second st	149	4,565 3	
Western ave	. Twenty-second st	. Twenty-sixth st . Ashland ave	34	843 2	
York st	Lailin St	. Asmand ave	94	040 2	
	Grand total	d	-	\$141,549 3	

In preparing the foregoing statement for estimated number of pipes on each street ordered for improvement, we have to make a schedule from our plat books describing the lot or part of lot, block and subdivision of each pipe to be assessed as carefully as would be required for state and county taxes, then the Assessor has to determine the length of the pipes to be assessed, as the mains in which the taps are inserted are generally on the north and west sides of the streets, and about eight feet from the centre of sixtysix feet streets, but uniform in this respect, after this is done the descriptions are entered on permanent register, and the estimated cost of each pipe entered up, and a copy taken for the use of Superintendent of Special Assessments. At any time before we advertise for letting, owners are permitted to put in the pipes as assessed, which fact the Assessor has to certify to Superintendent of Special Assessments, so that he may cancel the assessment on the warrant for all pipes so put in, or found in, by examination; all this requires constant care to avoid the illegal sale of lots already supplied.

It will be observed that the plat books form the foundation for water service pipe assessment, and it being remembered that six volumes were destroyed during the great fire of 1871, and the twenty-one volumes saved had only the record of pipes put in since 1868; a great many pipes put in before that

time do not appear on the plats, consequently we assess a great many lots already supplied, which we have to withdraw when pipes are found in. All pipes put in since the "fire" are carefully entered by scale on the plats, and all that are found by examination since are so entered up.

I regret to state that our old plat books are getting to be in a very dilapidated condition from their constant use and careless handling by all branches of the Water Department, and if means are not taken to secure the valuable records they now contain, by finishing up the new maps partially drawn, the loss and inconvenience to this Department will be incalculable. During the past year the immense growth of the city has kept the draughtsmen so busy with current work that very little has been done on the new plats, and now the recent annexed territory will greatly increase the routine work in that direction.

Respectfully submitted,

and around the contract of the state of the Man

T. N. BOND,

Superintendent.



PERMIT SUB-DEPARTMENT,

WATER OFFICE.

CHICAGO, January, 1888.

Hon. GEO. B. SWIFT,

Commissioner of Public Works.

DEAR SIR:—I herewith submit a statement of the work of the Permit Department, under the supervision of Henry G. Napier, Chief Clerk of Permits, for water supply issued, together with the receipts and expenditures of this Department during the fiscal year, ending December 31, 1887.

	5% inch Driven Ferrules.	¼ inch Driven Ferrules.	1 inch Driven Ferrules.	Grand Tota of Driven Ferrules Inserted.
January	19	13	1	33
February	52	37	2	91
March	245	159	9	413
April	302	451	7	760
May	452	1,436	11	1,899
June	291	1,584	7	1,882
July	395	629	8	1,033
August	510	535	12	1,057
September	377	239	00	616
October	422	224	00	646
November	254	136	00	390
December	89	57	00	146
	3,408	5,500	57	8,965

	% inch Screw Ferrules Inserted.	¾ inch Screw Ferrules Inserted.	1 inch Screw Ferrules Inserted.	Grand Total of Screw Ferrules Inserted.
September	47	31	7	85
October	1	6	10	17
November	127	18	14	159
December	169	38	5	212
	344	98	36	478

SUMMARY OF FERRULES INSERTED.

1	% inch.	¾ inch.	1 inch.	Grand Total
Driven Ferrules.,	3,408	5,500	57	8,965
Screw Ferrules,	344	93	36	473
Grand Total	3,752	5,598	93	9,438

Of the above number 631 ferrules were inserted as "Retaps" in replaced street mains, and 3,906 ferrules

for contractors to connect to street improvement water service-pipes.

By deducting 631 "Retaps" from the total presented above, leaves 8,807 ferrules as the actual increase to the number inserted in previous years.

EXPENDITURES.

Cost of 3,408 1/2-in. driven ferrules, @ 44 c	1,499.52
" 5,500 ¾-in. " @ 52 c	2,860 00
" 57 1-in. " @ \$1.30	74.10
" 344 %-in. screws, @ 65 c	223.60
" 93 ¾-in, " @ 85 c	79.05
" 36 1-in. " @ \$1.30	46.80
" two Mueller's Tapping Machines, with drills, &c	237.80
Salary of Permit Clerk	1,500.00
" Assistant Permit Clerk	1,200.00
" " "	1,016.68
" " " 1/2 month	37.50
Salaries paid Plumbing Inspector during 1887	7,326.48
Salaries paid Tappers during 1887	4,229.03
Paid for Expressage	378.00
Salary paid one Tap Inspector,	880.00
Maintenance of three Horses (estimated)	360.00
Cost of Shoeing three Horses	100.00
Cost of Permit Clerk's Books, Blanks, &c., (estimated)	300.00
Total Expenditures\$	22,348.56
Total Receipts	31,498.90
Total Expenditures	22,348.56
Net Gain	\$9,150.34

The number of permits issued during the year 1887, was as follows:

For tapping water mains		7,666
For miscellaneous connections		1,988
For moving houses		935
Grand Total,		10,589
Number of Plumbers' Licenses issued		
Number of Plumbers' Bonds filed		269
Number of Leak reports received		600
Number of inspections made by the Plumbing Inspectors.		8,031
RECEIPTS.		
Amount received for inserting 4,851 ferrules (of all sizes	s), as per	
Cash Book	\$	15,640.00
Amount credited to Water Fund for 3,956 34-inch ferrules		
for street improvement service pipes and deducted f		
tractors' bills, @ \$3.50		13,846.00
For 631 Retaps inserted in replaced street mains, as follow	's :	
458 %-in. Ferrules, @ \$3.00	\$1,374.00	
158 ¾-in. " @ \$3.50	553 00	
15 1-in. " @ \$5.40	81.00	
	\$2,008.00	
Less 82 of the above retaps paid for the North Chicago		
Street R. R. Co	264.30	1,743.70
For 269 Plumbers' Licenses, @ \$1.00		269.00
Total Receipts		31,498.90
	=	

The first of September, at your suggestion, the Department purchased two Mueller Screw Tapping Machines. The working of the Screw Tapping Machines has so far been very satisfactory. No com-

plaints have come in that the ferrules have blown out, and in that respect shows a marked contrast to the many former complaints from that source.

On the other hand, it must be said, that with the new machines we cannot, by one third, put in as many ferrule's per day as by the old method, thus necessitating an increase in the number of tappers and machines when our busy season opens early in the Spring. Yet as the property owners pay for the work, they should be supplied with the very best and safest that can be procured, though expense may be more.

I would most respectfully suggest that the driving or smooth-bore ferrules, now on hand, be hereafter used only for retapping in replaced street mains, thereby putting all new applicants for ferrules on the same footing, and also expediting the insertion of ferrules for our Pipe Foreman.

Accompanying this report you will find inventory of property connected with this Department.

Respectfully submitted,

T. N. BOND,

Superintendent.

INVENTORY PROPERTY—WATER PERMIT DEPARTMENT, DECEMBER 31, 1887.

Two Mueller Screw Tapping Machines. Six Tapping Machines—old pattern.

	½ inch Driven Ferrules,	% inch Driven Ferrules.	¾ inch Driven Ferrules.	1 inch Driven Ferrules.
On hand January 1st, 1887	58	3,076	3,327	558
Purchased during 1887		1,303	4,229	
	58	4,379	7,556	553
Used during 1887	2	3,408	5,500	57
On hand January 1st, 1888	56	1,005	2,047	509

	inch screw errules.	% inch Screw Ferrules.	¾ inch Screw Ferrules.	1 inch Screw Ferrules.
On hand January 1st, 1887			1,901	325
Used during 1887		2,801	1,901 93	325 36
On hand January 1st, 1888		2,451	1,815	286

SUMMARY OF INVOICE.

	½ inch Ferrules.	% inch Ferrules.	% inch Ferrules.	1 inch Ferrules.	Grand Total,
Driven Ferrules on hand Jan- uary 1st, 1888		1,005	2,047	509	3,617
1st, 1888		2,451	1,815	286	4,552
Grand Total on hand	56	3,456	3,862	795	8,169

Two Mueller Screw Tapping Machines. Six Tapping Machines—old pattern.

REPORT OF WATER INSPECTOR'S FORCE.

W. H. NICKERSON, CHIEF.

CHICAGO, January 1, 1888.

HON. GEO. B. SWIFT.

Commissioner of Public Works.

DEAR SIR:—That you may fully understand the work devolving upon the Water Inspectors, I desire to make a special report of their duties, as it is the very foundation of our water assessments.

Attached hereto you will find recapitulation of monthly reports made to me of work done from August, 1887, to December 31, 1887.

I regret not being able to give you report for the whole year, but up to August no reports were kept.

There are at present thirty-seven persons employed on the Water Inspector's force, consisting of one Chief Inspector, one Clerk and Book-keeper, thirtyfive Inspectors.

It is intended that an annual examination of the entire city shall be made. The Inspector's force is divided into two classes, about in the ratio of one to six. The larger portion is employed constantly on annual examinations, usually working in pairs, for the better convenience of measuring, locating, etc.

The location of each and every house is taken as accurately as if it were to be transferred to a purchaser. If more than one house is found upon a lot, each must be accurately located and described on the particular portion of the lot, or lots, as the case may be, where found.

The front of the house is accurately measured and stories counted. The house is then entered (if permission can be obtained from the occupants), and an account of all water-closets, baths, urinals, wash-basins (permanent sinks), in fact every contrivance for the use of water supplied by the city, is carefully noted and located on the particular floor where found. Also of all machinery and machine shops—every building, of whatsoever name or nature; horses, mules, liveries, etc.; hose, sprinklers, etc., wherever found; extra persons in houses; water-closets in yards, when the same are found in the houses, on the same premises; water-closets connected with the city water, accommodating stores, work-shops, etc.

If permission to enter buildings is refused (as is sometimes the case in private dwellings), then the Inspector must obtain his information as best he may. Tracings, showing the numbers of the lots and streets, are furnished by the Assessors' Department. With

these and his memoranda-book, tape-line, etc., the Inspector goes from house to house and from block to block, from ward to ward, until the entire city is traversed.

Another duty of the "Annual Inspectors" is to look after new pipe. When the people of any new street, or old one, for that matter, desire to have a water-pipe laid, they petition the city to that effect. The Assessor (of water) furnishes the Inspector with the name of the street or streets, and the number of feet on each where water-pipe is wanted. The Inspector finds out the number of houses already erected, or in the course of erection, or likely to be erected in the near future, on the tract designated. If his report is fair, the pipe is put down; after which the Inspector is called upon to go over the ground again, in the same manner as in the annual examinations, locate every building, and ascertain what facilities they contain for using the city water.

The smaller division of the Inspector's force is called "Special," from the fact that their work is "special." When an examination is found to differ with the one made on the year previous on the same property, a "Special" is sent out to ascertain whether the difference really exists, or whether a mistake has been made.

In paying their water tax many people complain that their tax is too high, and insist that they have not got so many water-closets, or baths, or hose, or animals, and for this many Specials are sent out each day. The "Special" should be an expert, as in addition to his other duties he is frequently detailed to take charge of or perform some of the most difficult work that is given to the Inspector to perform.

By the foregoing outline of the duties of Water Inspector, it is apparent that intelligence, education, sobriety, patience and refinement are necessary in the make-up of an efficient Inspector.

I am pleased to say that the present force of Inspectors is largely made up of such men, and trust, as they now have become familiar with the duties, little or no change will be made, unless for cause.

Owing to the large extent of territory annexed and work to be done, this force can profitably be increased five more; and in the near future, when the Twenty-fifth Ward has to pass examination, more will be required.

Inspectors'	salaries,	1886	\$36,231	40
	- 11	1887	32.722	26

Yours respectfully,

T. N. BOND,

Superintendent.

MONTHLY REPORT OF WATER-INSPECTOR'S FORCE FOR MONTHS OF AUGUST, SEPTEMBER, OCTOBER, NOVEMBER AND DECEMBER.

Houses Examined.

August.	Annual	Examination		8,020	
"	Special	"		1,368	9,388
September.	Annual			9,449	
66	Special			930	10,379
October.	Annual	• • •		9,928	
66	Special	"		$\boldsymbol{992}$	10,920
November.	Annual			7,986	
6.6	Special			1,494	9,480
December.	Annual	••		7,909	
"	Special			1,629	9,538
Total hou	ıses exan	nined	٠.	•••	49,705

Six men were detailed six days in October for special service in Engineer Department.



SEWERAGE DEPARTMENT.

CHICAGO, JANUARY 1, 1888.

GEO. B. SWIFT, Esq.,

Commissioner of Public Works.

DEAR SIR:—I have the honor herewith to transmit the Twelfth Annual Report of the Bureau of Sewers under the Department of Public Works, being the thirty-second yearly statement of the amount of money expended and work accomplished in the several branches of this Bureau, during the year 1887, as well as the total expenditures for constructing and maintenance of the same from the establishment of the system in the year 1855, to 1887, inclusive.

The cost to the city, of the work done in the several branches of this Bureau during the year just closed, is as follows:

For building new sewers and catch-basins	\$184,577.0
For house drains	23,541.2
For repairs sewers and catch-basins	8,513.69
For cleaning sewers and catch-basins	50,264.69
For street intersections	31,979.00
For salaries•	16,884.1
For office expenses	658.94

For a detailed statement of the amount of work done, please see the annexed tables.

NEW SEWERS AND CATCH-BASINS BUILT, AND THE COST OF SAME.

		Average cost per Foot.	Average depth of Trench in Feet.	Diameter in Feet.	Length in Feet.
	\$41,947.65	.97	7.9	1.00	43,245
	19,752.45	1.12	8.0	1.25	17,795
	5,672.55	1.95	9.7	1.50	2,909
	21,158.20	1.70	9.8	2.00	12,446
	20,252.50	2.50	10.7	2.50	8,101
	5,352.73	4.01	12.6	3.00	1,335
	5,535.32	3.71	10.5	3.50	1,492
1	4,363.04	5.92	11.8	6.00	736
\$150,673.19	26,638.75	10.55	13.9	7.50	2,525
	2,227.57	main sewer	rmitage ave.	let to the A	Building out
	465.61		n. sewer in K	Polk st	south of
	1,937.00		excavation	yards rock	15914 cubic
33,903.88	29,273.67	5,490.62	ss ment and priv	Le	
\$184,577.04	22 22 24 22 24 2	RUCTION	ST OF CONSTI	TOTAL CO	

TOTAL NUMBER OF CATCH-BASINS AND MAN-HOLES IN PLACE DECEMBER 31, 1887.

CONSTRUCTED DURING THE YEAR 1887.				TOTAL.	Total built previous	Total in place Dec.
Divisions.	South.	West.	North,		to 1887.	31, 1887.
Catch-basins	282	432	42	756	14,478	15,234
Man-holes	152	432	21	605	16,298	16,903

TOTAL COST FOR THE CONSTRUCTION OF SEWERS AND CATCH-BASINS AND CLEANING SAME SINCE THE ESTABLISHMENT OF THE SEWERAGE SYSTEM IN 1855, TO JANUARY 1, 1888.

		No. of	No. of	No. of	Cost of clean-	Street Inter-	
Year.	Lineal feet of Sewers	Catch-	Man-	House	ing Sewers	sections and	Cost of
rear.	built.	Basins built.	Holes built.	Drains put in.	and Catal Pasina	repairs of	Constructing.
		built	Duilt.	put in.	Catch-Basins.	Sewers.	
Previ's to 1861	283,586	1,174	2,102	2,194	\$ 5,619.48	No amts. found on Reports.	\$665,188.46
1861	2,826	18	33	243	1,715.60	\$ 2,951.76	3,617.31
1862	15,676	68	66	365	4,897.24	3,024.07	57,036.42
1863	39,605	192	204	536	5,065.40	2,058.11	169,527.38
1864	25,021	189	183	512	9,417.81	4,597.63	87,221.48
1865	29,948	223	168	1,288	13,818.07	7,493.56	187,643.02
1866	48,127	327	271	3,732	28,445.16	7,773.65	225,564.53
1867	89,681	418	555	3,703	26,540.81	9,581.42	416,780.51
1868	47,841	480	293	3,261	26,954.06	11,287.08	197,152.92
1869	139,705	771	928	3,979	26,015.68	7,527.16	654,141.26
1870	78,166	626	468	5,187	21,464.30	10,954.74	258,664.70
1871	50,716	277	357	3,093	17,415.46	42,557.72	153,295.36
1872	47,342	245	341	1,435	21,484.16	16,975.40	173,255.76
1873	146,702	897	1,015	4,691	31,229.27	29,781.97	450,222.90
1874	222,322	1,054	1,474	6,292	36,884.57	21,996.72	587,507.38
1875	120,971	958	789	3,365	32,098.23	28,107.40	342,932.89
1876	15,248	155	75	1,172	29,345.41	19,803.29	79,545.28
1877	64,666	363	431	1,822	35,763.33	16,959.44	291,829.63
1878	88,031	492	603	1,544	25,704.37	19,259.49	37,264.97
1879	145,381	820	1,043	2,958	29,283.67	10,649.69	130,840.50
1880	79,128	271	554	4,196	25,561.48	25,068.11	92,544.08
1881	132,076	548	917	4,810	34,512.15	30,967.89	452,310.06
1882	98,515	792	725	5,677	33,969.35	26,618.05	224,450.16
1883	75,364	835	497	5,963	34,749.74	25,140.81	232,084.33
1884	101,547	751	654	5,957	48,678.03	37,893.29	258,020.91
1885	118,647	796	854	6,325	46,532.18	45,333.02	203,188.03
1886	103,193	734	723	7,441	51,110.46	50,707.64	177,647.24
1987	90,584	756	605	7,193	50,264.65	43,789.60	184,577.34
100	2,500,615	15,230	16,928	98,929	\$749,540.12	\$558,858.72	\$6,944,004.81

LENGTH AND DIAMETER OF SEWERS IN PLACE DEC. 31, 1887, IN THE THREE DIVISIONS.

Diameter	South Division.	VISTON.	WEST DIVISION.	TISION.	NORTH DIVISION.	VISION.	TOTAL THREE DIVISIONS.	DIVISIONS.	Total in place
in Feet.	Built previous to 1877.	Built in 1877.	Built previous to 1877.	Built in 1877.	Built previous to 1877.	Built in 1877.	Built previous to 1877.	Built in 1877.	Dec. 31, 1887.
Feet.			15,493			***************************************	15,498	*******	15,493
,,,			7,765				7,765	********	7,76
- 19	***************************************	********	1,000	2,525			1,000	3,535	3,52
			1,462				1,462		1,40
	2,132		1,380		7.00		8,512	796	0,0
	6,671	*******	12,700	136	4,004		0,450	001	9,51
1/4	19 000		10,011	********	19 985		78 789		78.78
	7.893		68 875		8,333		79,601		79,60
*	13,202		78,631		11,918		102,751		102,75
9	4,201		84,178	1,492	8,759	********	42,138	1,492	43,63
	*********	Accesses.	665	*******	· · · · · · · · · · · · · · · · · · ·		999		99
	87,929		40,589	1,385	12,355	*******	90,873	1,335	92,20
,	86,648	4,362	34,479	3,193	30,981	546	152,108	8,101	160,20
	6,329			*********			6,359	10.440	0,30
	160,982	2,174	340,461	10,272	127,623		1 695	12,440	1 69
inches,	10,020		10.451	000	100 4	661	48 787	606 6	49.67
11	000,080	1,440	144,103	19 880	082.06	068	904,053	17,795	221.84
,,,	964,106	9,635	472,824	82,867	199,199	1,243	912,228	43,245	955,47
1	662,258	33,305	1,825,514	62,609	416,367	2,770	2,404,134	90,584	2,494,718
	684,458	58	1,391,123	23	419,137	37	455.88	17.15	472.48
	Of AA ner cent	- tuo	KK We now comb	*****	14 0	+	Milar	Miles	Miles

Of the above, 289.787 miles are constructed of brick, and 232.693 miles are of vitrified clay pipe.

LENGTH AND INTERIOR DIAMETER OF PUBLIC SEWERS IN PLACE DEC. 21, 1887, IN THE DIFFERENT WARDS OF THE CITY.

Feet, Feet, Feet, Feet,
1,480
704
2,132 4,487
1,380 5,068 4,114
2,642
1296
50 2,656
3,782 2,741
The state (gate)
358
3,686
3,512 24,161 9,511

SEWERS CONSTRUCTED IN THE YEAR 1887 IN THE SOUTH-DIVISION.

IN	FROM	то	Diam, in Feet,	Length in Feet.
Aldine st	Egan ave	Aldine sq	1	629
Bloom st		Thirty-seventh st		1,338
Butler st		Napoleon pl		304
Champlain st		. South		200
Cologne st			114	615
Douglas ave	LaSalle st	East	1.74	107
Egan ave	Prairie ave		1	278
Egan ave				395
Egan ave	South Park bl'd	. Aldine st		-
	C	Calumet ave		894
Egan ave	Indiana ave			141
Egan ave	Wentworth ave			705
Egan ave				357
Egan ave	Vincennes ave			188
Egan ave	Forrest ave	Calumet ave		327
Farrell st	Archer ave			340
Farrell st	S. of Archer ave		1	636
Forrest ave	Thirty-eighth st	Egan ave		615
Gage st	Douglas ave	Thirty-fifth ct	21/2	384
LaSalle st	Thirty-third st		1	494
LaSalle st	Douglas ave		11/2	793
Lime st	Archer ave	North	1	323
Parnell ave	Egan ave	Thirty-eighth st	114	645
Parnell ave	Thirty-seventh st	Thirty-eighth st	21/2	626
Paulina st	Douglas ave	Thirty seventh st	234	1,331
Portland ave		Twenty-fourth st	1	214
Portland ave		. Twenty-fifth pl	1	271
Portland ave	Alexander st			271
Twenty-third st	. LaSalle st			107
Thirtieth st	Wentworth ave			520
Thirty-second st		Butler st		628
Thirty-fifth ct	Gage st	Laurel st		442
Thirty-fifth ct	Halsted st	Tucker st		410
Thirty-fifth ct	Gage st	Tucker st	114	437
Thirty caventh et	Calumet ave	South Park bl'd	14	144
Thirty-seventh st.		e. East.		281
Thirty-seventh st.		East State at		460
Thirty-seventh st.				290
Thirty-eighth st			111	300
Wallace st	Thirty-second st			675
Wallace st		Thirty-fourth st		674
Wallace st	Thirty first st	Thirty-second st	2.	627
Wallace st	Thirty-fourth st	Douglas ave	2	660

SEWERS CONSTRUCTED DURING THE YEAR 1887, IN THE WEST DIVISION.

IN	FROM	то	Diam. in Feet.	Length in Feet.
Albany ave	Lake st	Walnut st	1	447
Armitage ave	Western ave	Milwaukee ave	6	414
Ambrose st	California ave	Boulevard	2	885
Ashland ct	Ashland ave	East	ĩ	207
Blanche st	Fleetwood st	McHenry st	i	315
Blucher st	Wood st	East	i	300
Bryson st	Leavitt st	East line of Hoyne ave	i	729
Blue Island ave	Leavitt st	Western ave	2	1
	318' W. of Robey st	West	1	1,504
Bryson st	500' 8. of Twenty-second st .	Laughton et		
California ave		Laughton st	31/2	825
California ave	. 334' S. of Thompson st	The second of th	71/2	2,528
Chicago ave	Leavitt st	Oakley ave	2	654
Courtland st		Oakley ave	1	1,278
Cicero ct	Harrison st	Congress st	1	367
Congress st	. 275' W. of Campbell ave	Cicero ct	1	258
Congress st	Campbell ave	West	200000	238
Claremont st	Taylor st	South	1	214
Crossing st.,	Paulina st	East	1	470
Clybourn pl	Paulina st	Elk Groye st	1	1,33
Coblenz st	Western ave	Leavitt st	1	1,330
Colorado ave	Madison st	South West	1	32
Chrystal ave	Robey st	Hoyne ave	1	598
Church ct	Morgan st	West	1	580
Davis st	North ave	North	114	594
Dudley st	Augusta st	Iowa st	114	66-
Eleventh st	Ashland ave	Laffin st	1	560
Fullerton ave	River	Elston ave		73
Fourteenth st	Western ave	West	114	613
Fifteenth st	Throop st	East	1	12
Fairfield ave	Ogden avenue	North		850
Ferdinand st	Leavitt st	Oakley ave	1	633
Flournoy st	California ave	Francisco st		67
Fleetwood st	Blackhawk st	North		
	COLUMN TO THE PARTY OF THE PART			1,31
Gilpin pl	***	East.		
Hastings st	The state of the s	Lincoln st	1	630
Homer st	Hoyne ave	Oakley ave		1,32
Hoyne ave	Blue Island ave	Ambrose st		1,360
Hoyne ave	. Chrystal st	Bryson st		325
Hoyne ave	Division st	Chrystal st		34
Homan ave	Madison st	Washington st		540
Homan ave	Lake st	South	1	29
Hinman st	Leavitt st	Hoyne ave		638
Harrison st	Sacramento ave	Francisco st		670
Harrison st	California ave	Francisco st	2	670
Irving pl.,	Jackson st	Adams st	1	28
Kinzie st	Robey st	Leavitt st	3	1,33
Kinzie st	Lincoln st	Robey st	31/2	670
Lytle st,	McAllister pl	Gilpin pl	1	315
Lincoln st	Seldon st	Yeaton st	1	279
Lunn ct	Western ave	West,	11/4	418
Lexington st	California ave	Francisco st	0	670

SEWERS CONSTRUCTED DURING THE YEAR 1887, IN THE WEST DIVISION .- CONTINUED.

IN	FROM	то		Length in Feet.
Leavitt st	. Armitage ave	Frankfort st	21/2	832
Martin st		Washtenaw ave	1	635
Marshfield ave	. Taylor st	North	1	340
Morgan pl	Morgan st	West	î	555
Maplewood ave		Thompson st	114	665
Maplewood ave	. North ave	Thompson st	2	669
Monroe st	. Kedzie ave		114	410
Moore st	. California ave	Boulevard	2	881
Nassau st	. Jackson st	South	ī	224
Newton st	. Augusta st	Thomas	î	635
Owasco st		R. R	1	575
Oakley ave		North	VALUE OF	594
Oakley ave		Frankfort st	214	835
	. Austin ave	North	355	230
Page st	. Twelfth st	Fifteenth st	1	
Paulina st Paulina st			1 10	1,975
Paulina st Paulina st	. Twelfth st		1	580
	. Clybourn pl	. Bloomingdale rd	114	645
Parmelee st		Hoyne ave	114	675
Parker pl	. Lake st	Fulton st	1%	545
Parmelee st	. California ave	Boulevard	2	881
Rundall pl	. Morgan st	. West	1	518
Rockwell st		North	1	585
Rockwell st		South	2	135
Rockwell st	. Laughton st		21/2	691
Sangamon st,	. Pratt st	Superior st	1	148
Sangamon st	. Chicago ave	Superior st	11/4	244
Seventeenth st		. Laffin st	1	650
Stephens st	. Van Buren st	. Jackson st	1	445
Shober st	. Hirsh st	. South	1	135
Shober st	. Division st	. Bryson	114	665
Shober st	. Hirsch st	. Thompson st	114	664
Shober st	. North ave	. Thompson st	2	627
Twelfth st		. R. R	114	563
Twelfth st	. R. R	. Campbell ave	114	463
Twelfth st	. Western ave	. Campbell ave	2	622
Twelfth st	. California ave	. Washtenaw ave	2	685
Thirteenth st		. Lincoln st	1	671
Thirteenth st		. Willis ct	1	235
Twenty-first st		. Throop st	1	1,310
Twenty-first st		. Laffin st		125
Thompson st	Seymour st			335
Turner ave	Twenty-first st	North and South		787
Talman ave		. Thompson st		668
Upton st	1-0			150
Upton st	. Western ave	Rosebud st	114	469
Walnut st			1 1	639
	Albany ave			676
Walnut st		. Sacramento ave		678
Walnut st	. Kedzie avenue	West		
Wilmot ave	Robey st	Hoyne ave		671
Wood st	Wabansia ave	Bloomingdale rd	. 1	607

SEWERS CONSTRUCTED DURING THE YEAR 1887 IN THE NORTH DIVISION.

IN	FROM	то	Diam. in Feet.	Length in Feet.
Belden ave	North Branch st. Bissell st. Southport ave. St. Clair st. Delaware pl. Blackhawk st.	WestEastSouth	1 11/2 11/2	546 128 890 627 240 840

WING SEWERS BUILT DURING THE YEAR 1887, IN THE WEST DIVISION.

IN		FROM	то	Diam. in Feet.	Length in Feet.
Albany ave	м. н.	in Lake st	South	114	42
Albany ave		Madison st		1	92
Albany ave			North and South	i	80
Blanche st		Dickson	The second secon	i	86
Chrystal st		Hoyne ave		i	74
Colorado ave	46	Madison st		1	78
Churchill st	**		West	1	40
Clybourn pl			East	i	38
Dudley st	1 44	Chicago ave	North	114	46
Dudley st	44	Division st.	South	174	52
Davis st	44		North	2	54
Fall st	**	Warren ave	South	1	37
Francisco st		Madison st	North	1	60
Francisco st			North	14	43
Francisco st			South	14	42
Gross Terrace	44		South	1	41
Homan ave		I ake et	North	2	66
		Madison et	South	i	
Homan ave	1 200	Division st	South	0	52
Hoyne ave	44		South North and South	î	54
Laffin st	300				76
Leavitt st	36.	Division st		2	54
Leavitt st		Chicago ave		2	45
Lincoln st	7.00		North and South		86
Maplewood ave	0.00		North	1	66
Marshfield ave	1 300	Taylor st		1	43
Oakley ave	1 200	Division st	North and South	2	108
Olive st	**	Taylor st	South	1	42
Pratt st			East	1	40
Ridgley st	11 000		East and West	1	76
Sacramento ave	10		South	to the same	48
Sacramento ave	44		North	114	46
Sacramento ave			North and South		80
Sacramento ave			South	114	41
Sacramento ave	66.	Madison st,	North	1	52
Superior st	66	Morgan st	East	1	46
Twenty-third st	44	Lawndale ave	East	114	38
Twenty-fourth st	61	Lawndale ave	East	114	40
Twenty-sixth st	£4.		East and West	114	80
Winchester ave	46	Taylor st	North and South	1	84
Wood st	66		North	114	50
York st	. 66.		East and West	1	82

WING SEWERS BUILT DURING THE YEAR 1887, IN THE SOUTH DIVISION.

IN	FROM	то	Diam. in Feet.	Length in Feet.
Aldine st	M. H. in Thirty-ninth s	North	1	30
Boardman st	" Archer ave		114	39
Butler st	" Thirty-fifth st.	North and South	2	92
Charlton st	" Thirty-fifth st		2	38
Charlton st	" Thirty-fifth st	South	21/2	20
Calumet ave	" Thirty-seventh st		1	36
Champlain st	" Archer ave	South	21/2	50
Eda st	" Indiana ave		1	38
Farrell st	" Archer ave	South	114	45
Hoyne ave	" Archer ave	North	1%	50
Hoyne ave	" Archer ave		21/2	50
Honore st	" Thirty-fifth st.	South	21/2	42
Iron st	" Thirty-fifth st.,	North	2	40
Jasper st	" Thirty-fifth st.		2	40
Leavitt st	Archer ave	North	114	50
Leavitt st	" Archer ave	South	21/2	75
Laffin st	" Thirty-fifth st.		2	42
Lincoln st	" Thirty-fifth st	North	2	41
Lincoln st	" Thirty-fifth st.		21/2	40
Loomis st	" Thirty-fifth st.		2	41
	" Archer ave	North	114	39
Lockport st	" Thirty-fifth st.		2	47
Lowe ave	" Thirty-fifth st.	South	21/2	1000
Lundy's lane	" Archer ave		1	41
Market sq	Archer ave		1	48
Market sq Marshfield ave	" Thirty-fifth st.	North	114	40
	" Thirty-fifth st.	North	224	46
Parnell ave	Thirty-fifth st.	North	1000	1000
Robey st	I mirty-men St.		21/2	40
Shields ave	Thury min st.		11/2	40
Shields ave	I mily mill st.		21/2	49
Summit st	Attender ave	North	114	38
Twenty-eighth st	Dasmer st		1	72
Twenty-ninth st	Dasiner St		1	77
Thirtieth st	Dasmer st		1	78
Thirty-third st	Labane St	East and West	1	68
Thirty-third st	Aichel ave		114	60
Thirty-fourth st	Trichel ave	East.,	1	52
Thirty-eighth st	Landant Street	West	1	36
Thirty eighth st	" Indiana ave	East	1	38
Thirty eighth st	Prairie ave		1	36
Thirty-third ct	" Archer ave	South	1	48
Thirty seventh ct	" Indiana ave	West	1	38
Tucker st	" Thirty-fifth st	South	1	40
Ullman st	" Thirty-fifth st	South	21/2	40
Vermont st	" Thirty-fifth st		21/2	41
Wood st	" Archer ave	North	114	50

WING SEWERS BUILT DURING THE YEAR 1887, IN THE NORTH DIVISION.

IN		FROM	то	Diam. in Feet.	Length in Feet.
Erie st	м. н.	in St. Clair st St. Clair st	West	1 1 1 1 1 1 1 1 1 1	20 34
Ohio st	"	St. Clair st	. West	1	20

MAN-HOLES AND CATCH-BASINS RAISED TO GRADE ON STREETS ORDERED IMPROVED, TOGETHER WITH COST OF SAME, DURING THE YEAR 1887, AS FOLLOWS:

					Cov	Covers.		Straight Pipe Curved Pipe.	t Pipe	Curved	Pipe.	.25	၁	st.	TOTAL
á	No. Description of work done. Cement. Brick. Iron. Wood wikee. Iron. Bit. Ft. No. No. No. R. Material. Teaming. COST.	Cement. Bbls,	Brick.	Iron.	Wood	Mil- w'kee.	Small Iron.	9 in. Fr.	12 in. Ft.	No.	Iz in.	S Box	Material.	Labor and Teaming.	COST.
18	Man-holes raised to grade	2,211	671,800	861	808	11	30	1,087	+	180	50	2,363	\$17,853.76	\$14,125.30	\$31,979.06

AMOUNT EATENDED FOR REFAIRS OF SEWERS, MAN-HOLES AND CAICH-BASINS, ALSO MAN-HOLE AND CATCH-BASIN COVERS, DURING THE VEAR 1887, AS FOLLOWS:

-	Total Cost	8 \$11,810.54 3,296.85	38.513.00	
COST.	Labor.	\$8.073.02 isc. credits,	Total cost to city,	
	Material.	\$3,737.52 \$8,073.02 Less by misc. credits,	Total	
	Traps.	961	& C. Grates.	1.
i	.n 2	1	Grates	170
Slants,	Isin.			-
S	ni 8	01	S C	
t's	6×81	1 111110001	M.H. & C. B. Tops.	741
J'c	SIx8I	1 1111197	B. M.	
Curved Pipe. J'ct's	.ni8[]	1 . 1 . 1 . 1 . 1	Vood M-H.	1
I Pi	.ni dl		Wood Lids.	9.000
vec	lain.			0
Cur	mi 0			1
	.ni 81	128	Iron Wood	2
ý	.ni dI	988		1
Straight Pipe.	.mi SI	: : : : : : : : : : : : : : : : : : :		187
raigh	.mi 8		Wood Covers.	40
St	.ni 8	8	Iron Wood Covers. Covers.	1
	-ai b	[8]]]]]]	Iron Covers.	30
Covers.	boow	2		1
Co	lron,	8	Brick.	12 070
	Brick.	31,810 1,000 1,000 3,200 5,800 12,300	8	1
.31	Сешеп	191 101 101 101		107
Description of work	done.	Man-holes repaired		Man-hole and Catch-basin
- 5	1	oles r	2	7
020	Cac	Man-holes re Catch-basins Feet 4-inch d . 9 12 2-foot		an
-		archine in the same	:	ole
-			-	P. P.
	No.	250 08 88 80 05 0 0 0 0 0 0 0 0 0 0 0 0 0		And And

SUMMARY OF RECEIPTS AND EXPENDITURES IN THE HOUSE DRAIN DEPARTMENT DURING THE YEAR 1887.

	P	ERMITS	ISSUE	D.		Post of All
DIVISIONS.	12-inch.	9-inch.	6-inch.	Total.	Receipts.	Expendi- tures.
West	4	47	2,432	2,483	\$12,757.50	
South	1	41	1,115	1,157	6,012.50	
North		18	301	319	1,690.00	
25th Ward			22	22	112.50	
Licenses		*****			361.00	
Special Assessments					15,401.40	
	5	106	3,870	3,981	\$36,334.90	*******
Superintendence, Inspecti	on and	Office S	upplies.			\$18,838.08
Junctions and Slants set in	new se	wers du	ring the	e year	1887	4,538.70
Junctions and Slants set in	old sev	wers dur	ing the	year 1	887	276.99
Surplus						12,681.18
TOTAL						\$36,334.90
There is yet due from spec put in place during which would increa	the year	r and n	ot colle	cted, \$	3,912.79,	\$40,247.69

NUMBER OF HOUSE DRAINS PUT IN PLACE DURING THE YEAR 1887 UNDER SPECIAL ASSESSMENT.

Divisions.	Total Num- ber of Drains.	Total Length in feet.	Total Cost.	Average Cost per Drain.	Average Length of Drain in feet	Average Cost per foot.
West	2,583	72,409	\$20,861.42	\$ 8.08	28.03	28.82c
South	1,419	38,535	10,746.98	7.57	27.15	27.89c
North	117	3,009	1,037.24	11.43	25.72	44.44c
TOTALS	4,119	113,953	\$32,945.64	\$8.00	27.665	28.90c

Making a total of 21.58 miles of 6-inch drains laid by contract and paid for by special assessments.

SEWERS AND CATCH-BASINS CLEANED IN THE THREE DIVISIONS DURING THE YEAR 1887.

There Ind Feet	Cost.	**	12,914.61 2.51	6,498.31 1.78	\$25,192.45 \$1.67	Cost. Average Cost	\$24,638.54 \$1.97	. \$49,830.99	. \$50,264.65
	Feet Cleaned.	621,620	518,913	365,070	\$4,191.65 1,500,602	No. of.	13,508		· · · · · · · · · · · · · · · · · · ·
OLVISION.	Cost.	\$1,616.43	1,869.19	1,206.03	\$4,191.65	Cost	\$5,448.28		
NORTH DIVISION.	Feet Cleaned.	189,235	77,302	45,460	311,997	No. of.	2,987		H-BASINS
IVISION.	Cost.	\$1,895.56	6,347.04	3,821.48	\$12,064.08	Cost.	\$11,250.64		RS AND CATC
WEST DIVISION.	Feet Cleaned.	196,360	238,730	257,100	692,190	No. of.	5,535	: :	TOTAL COST OF CLEANING SEWERS AND CATCH-BASINS.
IVISION.	Cost	\$2,267.54	5,198.38	1,470.80	\$8,936.72	Cost.	\$7,944.67	atch-basins.	COST OF CLE
SOUTH DIVISION.	Feet Cleaned.	236,025	197,880	62,510	496,415	No. of.	4,031	sewers and calls, repairs of	TOTAL
METHOD		Flushing	Iron Scraper	Wood Scraper.	TOTALS		Catch-basins cleaned	Cost of cleaning sewers and catch-basins, Miscellaneous bills, repairs of tools, etc.,	

The sewers cleaned during the past year have been mostly those that have not been cleaned before for several years, and consequently were very dirty, and were costly to clean.

The stage of the water in the lake has averaged about two feet lower for the past year than that of previous years, in consequence of which we have been enabled to clean the sewers that for several years past have been bore full of back water from the lake, making it impossible to clean them thoroughly.

The expense of cleaning catch-basins is increasing very rapidly, as the deposit taken from them has to be hauled a long distance to find suitable dumping ground. In years past the deposit taken from catch-basins along unimproved streets could be dumped near the basins, without complaint from people residing in the vicinity; now the deposit from nearly every basin cleaned has to be hauled to the dump, which in many cases is from two to three miles away from the basins. In the near future some other means will have to be provided for the disposal of material taken from sewers and catch-basins; even now I am of the opinion that it can be taken out of the city by cars and disposed of nearly as cheap as it can be hauled to the dumps.

STATEMENT SHOWING THE VALUE OF THE AMOUNT OF MA-TERIAL AND STOCK ON HAND AND THE UNEXPENDED BALANCE STANDING TO THE CREDIT OF THE SEWERAGE FUND JAN. 1, 1888.

Wooden Covers and Lumber	\$ 4,602.62
Iron Covers	1,848.75
Sewer Pipe	2,733.15
Brick	1,197.96
Sand	101.00
Cement,	10.50
Stock (Machinery, Tools, etc.)	5,500.00
Unexpended Balance	84,661.93
Of this amount there is due private parties holding cer- tificates for money advanced to construct sewers, }	10,678.07

In closing this report I desire to acknowledge my obligations for the uniform courtesy and support of the Commissioner and other officers of the Department in the discharge of the duties of my position; also to testify to the faithfulness, industry and zeal with which the gentlemen connected with this Bureau have discharged their various duties.

Respectfully submitted,

O. H. CHENEY.

Superintendent of Sewers.

BUREAU OF STREETS.

CHICAGO, December 31st, 1887.

GEO. B. SWIFT, Esq.,

Commissioner of Public Works.

DEAR SIR:—I have the honor to submit herewith the Twelfth Annual Report of the Bureau of Streets. It contains a general review of the work accomplished during the year, under the supervision of this Bureau; also street railway extensions, and a complete list of streets occupied by railway tracks in the several divisions of the city, operated and controlled by the different horse and cable railway companies.

STREET AND ALLEY IMPROVEMENTS.

The following tables show the progress made in Street and Alley improvements, the character of pavement laid on each street, the total length in lineal feet and miles, as well as surface measurement in square yards:

STREETS IMPROVED,

NAME OF STREET.	FROM	то	COMMENCED
Alley N. 34 block 4, Kinzie s	Cass st	Centre line, lot 3	June 18, 1887
Alley bet. Wells and La Salle sts.	Goethe st	Schiller st	Private
Illey bet. Clark and Salle sts	Grant pl	Schiller st	Aug. 1, 1887
Belden ave	Clark st	Hurlbut st	Nov. 3, 1886
Burton pl	Clark st	Dearborn ave	Nov. 6, 1886
Crosby st	Division st	Hobbie st	May 11, 1887
Chestnut st	Clark st	State st	July 8, 1887
Dickson st	Division st	North ave	July 5, 1887
Delaware pl	Dearborn ave	Pine st	Aug. 2, 1887
Elm st	State st	Lake Shore Drive	Nov. 30, 1886
Franklin st	North ave	Sigel st	Aug. 15, 188
Larrabee st	Chicago ave	Division st	Aug. 8, 188
Lincoln pl	Sophia st	Webster ave	Nov. 3, 188
Mohawk st	North ave	Clybourn ave	Oct. 18, 1887
Ontario st	St. Clair st	600 feet East	Oct. 27, 1887
Rush st	N. Water st	Illinois st	Apr. 18, 188
Rees st	Halsted st	Larrabee st	Aug. 10, 188
Scott st	150 ft. E. of State st.	Stone st	Aug. 22, 1887
Scott st	Stone st	Lake Shore Drive	Private
Sedgwick st	Chicago ave	Division st	Aug. 15, 1887
St. Clair st	Indiana st	Superior st	Nov. 8, 188
St. Clair st	Superior st	Ontario st	Oct. 26, 188
St. Clair st	Ontario st	Indiana st	Oct. 1, 188
Wendell st	Wells st.,	Eastern terminus	July 26, 188
Wells st	Chicago ave	Division st	July 1, 188
Wells st	Ohio st	Illinois st	Oct. 22, 188
Wells st	Chicago ave	Kinzie st	July 1, 188
	omengo are	TELLIBRO ON THE TELLIBRO ON TH	344 -

^{*}Private contract. †Unfinished.

NORTH DIVISION, 1887.

FINISHED.	CONTRACTOR.	NATURE OF IMPROVEMENT.	sq. yds.	LIN. FT.
June 20, 1887 Contract Aug. 9, 1887 Apr. 22, 1887 May 6, 1887 July 25, 1887 Aug. 16, 1887 Aug. 9, 1887 Aug. 30, 1887 Aug. 21, 1887 Aug. 21, 1887 Apr. 26, 1887 Nov. 12, 1887 Aug. 31, 1887 Aug. 31, 1887 Aug. 31, 1887 Contract	W. F. Hair, Watson & Perkins. A. J. McBean & Co. J. B. Smith & Co. R. F. Conway. Olaf Vider. John Duffy & Sons. John Duffy & Sons. R. F. Conway. R. F. Conway. John Johnson. Sackley, Daley & Co. J. B. Smith & Co. James Conlon. Olaf Vider. J. B. Smith & Co. Barber Asphalt Co.	Cedar blocks. Cb. W. Cedar blocks. Curbing. C. and F. Cedar blocks. C. and F. Cedar blocks. Sheet Asphalt.	127.00 1,477.87 1,936.00 1,688.31 1,111.19 4,585.91 2,309.77 11,192.47 5,678.11 1,165.98	125.00 665.00 946.95 495.90 319.49 960.03 681.83 2,575.43 1,279.72 2,599.31 597.46 1,910.85 298.15 421.79 1,233.28 565.25
May 7, 1887 Oct. 29, 1887 Nov. 11, 1887 Aug. 20, 1887 Sept. 4, 1887	R. F. Conway. Olaf Vider. J. B. Smith & Co. J. B. Smith & Co. Olaf Vider. A. J. McBean & Co. Chas. T. Yerkes.	C. and F Cedar blocks C. & Cedar blocks. C. & Cedar blocks. F. & Cedar blocks.	8,915.67 3,276.60 2,822.90 970.04 9,831.23 1,929.96	2,493.0 1,402.0 805.2 673.8 219.8 2,495.0 500.8
	A. J. McBean & Co		8,297.55 94,458.45	2,051.6

Total Miles, 535.

STREETS IMPROVED,

Adams st. St. Butler st. An Couch pl Fi	ourteenth st hirtieth st wenty-ninth st	Eighteenth st. Sixteenth st. Thirty-first st. Thirty-first st. S. line E. & W. alley Western ave. Chicago River. Twenty-fourth st. Franklin st. Rhodes ave Thirtieth st. Halsted st. Chicago River. Cottage Grove ave. Adams st. Quincy st. Quincy st. Egan ave. Douglas ave. Twenty-ninth st. Thirtieth st. Egan ave. Fifth ave. S. Branch River.	June 27, 1887 Oct. 22, 1887 Nov. 2, 1887 Nov. 2, 1887 Aug. 5, 1887 Aug. 5, 1887 Aug. 18, 1887 June 18, 1887 June 17, 1887 Aug. 1, 1887 Nov. 1, 1886 July 20, 1887 Sept. 1, 1887 May 19, 1887 July 2, 1887 July 1, 1887 Aug. 12, 1887 July 2, 1887 July 2, 1887 July 2, 1887 July 2, 1887 July 20, 1887
Illey bet. Michigan & Indiana ares. Edilley bet. Groveland & Lake Pt. ares Tillley bet. Michigan & Indiana ares. Tilley bet. Michigan & Indiana ares. Tilley bet. Michigan & Indiana ares. Tilley bet. Michael & La Salle st. McArcher ave. Cl. Adams st. St. Butler st. An Edilley bet. Tilley bet. Tilley bet. Tilley bet. Adams st. St. Butler st. An Edilley bet. Tilley b	ourteenth st. irtieth st. wenty-ninth st. onroe st. nicago River. ate st. cher ave. fith ave. ottage Grove ave. wenty-sixth st. S. & M. S. R. R. alsted st. adison st. lams st. lams st. lams st. lams st. ouglas ave. nirtieth st. wenty-sixth st. wenty-sixth st. adison st. lams st. lams st. ouglas ave. nirtieth st. wenty-ninth st. ouglas ave. ate st.	Sixteenth st Thirty-first st. Thirty-first st. Thirtieth st. S. line E. & W. alley Western ave. Chicago River. Twenty-fourth st. Franklin st. Rhodes ave. Thirtieth st. Halsted st. Chicago River. Cottage Grove ave. Adams st. Quincy st. Quincy st. Quincy st. Egan ave. Douglas ave. Twenty-ninth st. Thirtieth st. Egan ave. Fifth ave.	Oct. 22, 1887 Nov. 2, 1887 June 18, 1887 Aug. 5, 1887 June 18, 1887 June 17, 1887 June 17, 1887 Aug. 1, 1887 Nov. 1, 1886 July 20, 1887 Sept. 12, 1887 Sept. 1, 1887 May 19, 1887 July 1, 1887 July 1, 1887 July 2, 1887 July 2, 1887 July 2, 1887 July 2, 1887 July 5, 1887 July 20, 1887
Illey bet. Groveland & Lake Pk. aves Tilley bet. Michigan & Indiana aves. Its Illey bet. Fifth ave. & La Salle st. Acherave. Cl. Adams st. St. Butler st. An Couch pl. Fic. College pl. Cc. Cc. Cc. Cc. Cc. Cc. Cc. Cc. Cc. Cc	wenty-ninth st. oonroe st. nicago River. ate st. cher ave. fth ave. ottage Grove ave. wenty-sixth st. S. & M. S. R. R. alsted st. adison st. lams st. lams st. lams st. ouglas ave. nirtieth st. wenty-second st. wenty-ninth st. ouglas ave. ate st. ouglas ave. ate st.	Thirty-first st. Thirtieth st. S. line E. & W. alley Western ave. Chicago River. Twenty-fourth st. Franklin st. Rhodes ave. Thirtieth st. Halsted st. Chicago River. Cottage Grove ave. Adams st. Quincy st. Quincy st. Egan ave. Douglas ave. Twenty-ninth st. Thirtieth st. Egan ave. Fifth ave.	Nov. 2, 1887 Nov. 2, 1887 June 18, 1887 Aug. 5, 1887 May 3, 1887 June 17, 1887 Aug. 1, 1887 Nov. 1, 1886 July 20, 1887 Sept. 12, 1887 May 19, 1887 July 2, 1887 July 2, 1887 July 2, 1887 July 2, 1887 July 5, 1887 July 2, 1887
Illey bet. Michigan & Indiana aves. Tulley bet. Fifth ave. & La Salle st. McArcher ave. Cl. Addams st. St. Butler st. An Couch pl. Fi. Couch pl. Co. College pl. College p	wenty-ninth st. onroe st. inicago River. ate st. rcher ave. fith ave. ottage Grove ave. wenty-mixth st. S. & M. S. R. R. alsted st. adison st. lams st. lams st. lams st. ouglas ave. initieth st. wenty-second st. wenty-ninth st. ouglas ave. ate st.	Thirtieth st. S. line E. & W. alley Western ave. Chicago River Twenty-fourth st. Franklin st. Rhodes ave. Thirtieth st. Halsted st. Chicago River Cottage Grove ave. Adams st. Quincy st. Quincy st. Egan ave. Douglas ave. Twenty-ninth st. Thirtieth st. Egan ave. Fifth ave.	Nov. 2, 1887 June 18, 1887 Aug. 5, 1887 May 3, 1887 June 18, 1887 June 17, 1887 Aug. 1, 1887 Nov. 1, 1886 July 20, 1887 Sept. 1, 1887 Sept. 1, 1887 May 19, 1887 June 25, 1887 July 2, 1887 July 2, 1887 July 2, 1887 July 5, 1887 July 5, 1887
Illey bet. Fifth ave. & La Salle st. M. Archer ave. Cl. Archer ave. Cl. Adams st. St. Butler st. An Couch pl. Fi College pl. Cc. Dashiel st. Tv. Douglas ave. L. Douglas ave. L. Douglas ave. H. M. ½ Egan ave. St. Fifth ave. Ac. Fifth ave. Ac. Fifth ave. Tudiana ave. Th. Indiana ave. Th. Indiana ave. Tr. Indiana ave. Indiana ave. Tr. Indiana ave. Indiana ave. Tr. Indiana ave. Indiana	onroe st iicago River ate st cher ave fth ave tttage Grove ave wenty sixth st S. & M. S. R. R. alsted st adison st lams st lams st lams st ouglas ave nirtieth st wenty second st wenty-ninth st ouglas ave ate st.	S. line E. & W. alley Western ave. Chicago River. Twenty-fourth st. Franklin st. Rhodes ave Thirtieth st. Halsted st. Chicago River. Cottage Grove ave. Adams st. Quincy st. Quincy st. Egan ave. Douglas ave. Twenty-ninth st. Thirtieth st. Egan ave. Fifth ave.	June 18, 1887 Aug. 5, 1887 May 3, 1887 June 18, 1887 June 17, 1887 Aug. 1, 1887 Nov. 1, 1886 July 20, 1887 Sept. 1, 1887 Sept. 1, 1887 May 19, 1887 June 25, 1887 July 2, 1887 July 2, 1887 July 2, 1887 July 2, 1887 July 5, 1887 July 20, 1887 July 20, 1887
Archer ave Cl Adams st. St Butler st. An Couch pl Fi College pl Cc Dashiel st. Tv Douglas ave L Douglas ave Hi N. ½ Egan ave St Franklin st. Mo Franklin st. Ac Fifth ave Ac Hodiana ave Tl Indiana ave Tr Indiana ave Tr Indiana ave To Indiana ave T	nicago River	Western ave. Chicago River. Twenty-fourth st. Franklin st. Rhodes ave. Thirtieth st. Halsted st. Chicago River. Cottage Grove ave. Adams st. Quincy st. Quincy st. Egan ave. Douglas ave. Twenty-ninth st. Thirtieth st. Egan ave. Fifth ave.	Aug. 5, 1887 May 3, 1887 June 18, 1887 June 17, 1887 Aug. 1, 1887 Nov. 1, 1886 July 20, 1887 Sept. 12, 1887 Sept. 1, 1887 May 19, 1887 June 25, 1887 July 1, 1887 July 2, 1887 July 2, 1887 July 5, 1887 July 5, 1887
Adams st. St. Butler st. An Couch pl Fit	ate st. cher ave. fth ave. strage Grove ave. wenty sixth st. S. & M. S. R. R. alsted st. adison st. lams st. lams st. lams st. lams st. wenty second st. ate st.	Chicago River. Twenty-fourth st. Franklin st. Rhodes ave. Thirtieth st. Halsted st. Chicago River. Cottage Grove ave. Adams st. Quincy st. Quincy st. Egan ave. Douglas ave. Twenty-ninth st. Thirtieth st. Egan ave. Fifth ave.	May 3, 1887 June 18, 1887 June 17, 1887 Aug. 1, 1887 Nov. 1, 1886 July 20, 1887 Sept. 12, 1887 Sept. 12, 1887 June 25, 1887 July 1, 1887 July 1, 1887 July 2, 1887 July 2, 1887 July 5, 1887 July 5, 1887
Butler st. Couch pl Couch pl Fi Couch pl Fi College pl Coashiel st Tv Douglas ave L Douglas ave L Franklin st Fran	rcher ave. fth ave. f	Twenty-fourth st Franklin st. Rhodes ave Thirtieth st Halsted st. Chicago River. Cottage Grove ave. Adams st Quincy st Quincy st Egan ave Douglas ave Twenty-ninth st Thirtieth st Egan ave Fifth ave	June 18, 1887 June 17, 1887 Aug. 1, 1887 Nov. 1, 1886 July 20, 1887 Sept. 1, 1887 Sept. 1, 1887 May 19, 1887 June 25, 1887 July 1, 1887 July 2, 1887 July 2, 1887 July 5, 1887 July 5, 1887
Couch pl Fi College pl Co Dashiel st. Tv Douglas ave L. Douglas ave Han N. ½ Egan ave St Franklin st. Ma Granklin st. Ac Fifth ave Ac Forest ave Do Indiana ave Tl Indiana ave Tv Indiana	fth ave. ottage Grove ave. wenty sixth st. S. & M. S. R. R. alsted st. adison st. alams st. lams st. lams st. ouglas ave. nirtieth st. wenty second st. wenty ninth st. ouglas ave. at est. at est. at est.	Franklin st. Rhodes ave. Thirtieth st. Halsted st. Chicago River. Cottage Grove ave. Adams st. Quincy st. Quincy st. Egan ave. Douglas ave. Twenty-ninth st. Thirtieth st. Egan ave. Fifth ave.	June 17, 1887 Aug. 1, 1887 Nov. 1, 1886 July 20, 1887 Sept. 12, 1887 Sept. 1, 1887 May 19, 1887 June 25, 1887 July 1, 1887 July 2, 1887 July 20, 1887 July 20, 1887
College pl	ottage Grove ave wenty sixth st S. & M. S. R. R. alsted st adison st lams st lams st lams st ouglas ave irtieth st wenty second st wenty-ninth st ouglas ave ate st	Rhodes ave Thirtieth st Halsted st Chicago River Cottage Grove ave Adams st Quincy st Quincy st Egan ave Douglas ave Twenty-ninth st Thirtieth st Egan ave Fifth ave	Aug. 1, 1887 Nov. 1, 1886 July 20, 1887 Sept. 12, 1887 Sept. 1, 1887 May 19, 1887 July 1, 1887 July 2, 1887 July 2, 1887 July 2, 1887 July 2, 1887 July 5, 1887 July 20, 1887
Dashiel st. Douglas ave L. Douglas ave L. Douglas ave His Douglas ave His N 1/2 Egan ave St. Franklin st. Mranklin st. Franklin st. Ac Frosta ave Douglas Franklin ave Tv. Indiana ave Tv. Ind	wenty sixth st S. & M. S. R. R. alsted st adison st lams st lams st lams st lams st wenty second st wenty second st wenty-ninth st ouglas ave ate st	Thirtieth st	Nov. 1, 1886 July 20, 1887 Sept. 12, 1887 Sept. 1, 1887 May 19, 1887 June 25, 1887 July 1, 1887 July 2, 1887 July 2, 1887 July 2, 1887 July 5, 1887 July 5, 1887
Douglas ave L. Douglas ave H. N. ½ Egan ave St. Franklin st M. Franklin st Ac Forest ave Do Indiana ave T. Indi	S. & M. S. R. R. alsted st ate st adison st lams st lams st lams st ouglas ave irrieth st wenty-second st wenty-ninth st ouglas ave ate st	Halsted st. Chicago River. Cottage Grove ave. Adams st. Quincy st. Quincy st. Egan ave. Douglas ave. Twenty-ninth st. Thirtieth st. Egan ave. Fifth ave.	July 20, 1887 Sept. 12, 1887 Sept. 1, 1887 May 19, 1887 July 2, 1887 Aug. 12, 1887 July 2, 1887 July 2, 1887 July 5, 1887 July 5, 1887 July 20, 1887
Douglas ave. His N. ½ Egan ave. Stranklin st. Miranklin st. Actification of the stranklin o	alsted st	Chicago River. Cottage Grove ave. Adams st. Quincy st. Quincy st Egan ave. Douglas ave. Twenty-ninth st Thirtieth st. Egan ave. Fifth ave.	Sept. 12, 1887 Sept. 1, 1887 May 19, 1887 June 25, 1887 July 1, 1887 Aug. 12, 1887 July 2, 1887 July 2, 1887 July 2, 1887 July 5, 1887 July 20, 1887
N. ½ Egan ave St. Franklin st. Mr Franklin st. Ac Fifth ave Ac Forest ave De Indiana ave Tl Indiana ave Tv Indiana ave Tv Indiana ave St. Lake st. Ce La Salle st. Ra Portland ave Ac Frospect pl Vi Prairie ave Tl	ate st adison st lams st lams st ouglas ave nirtieth st wenty-second st wenty-ninth st ouglas ave ate st	Cottage Grove ave Adams st Quincy st Quincy st Egan ave Douglas ave Twenty-ninth st Thirtieth st Egan ave Fifth ave	Sept. 1, 1887 May 19, 1887 June 25, 1887 July 1, 1887 Aug. 12, 1887 July 2, 1887 July 2, 1887 July 5, 1887 July 20, 1887
Franklin st. Micranklin st. Activith ave Activith ave Dondiana ave Tundiana ave Tundiana ave Tundiana ave Tundiana ave Tundiana ave Tundiana ave Sackson st. St. Acke st. Co. La Salle st. Rar Portland ave Arrospect pl. ViPrairie ave Tundiana ave Transacture Salle st. Rar Portland ave Arrospect pl. ViPrairie ave Tundiana ave Tundi	adison st	Adams st. Quincy st. Quincy st. Egan ave. Douglas ave. Twenty-ninth st. Thirtieth st. Egan ave. Fifth ave.	May 19, 1887 June 25, 1887 July 1, 1887 Aug. 12, 1887 July 2, 1887 June 15, 1887 July 2, 1887 July 5, 1887 July 20, 1887
Franklin st. Ac ifth ave Ac Forest ave De Indiana ave Ti Indiana ave Tv I	lams st. lams st. lams st. ouglas ave. nirtieth st. wenty-second st. wenty-ninth st. ouglas ave. ate st.	Quincy st. Quincy st. Egan ave. Douglas ave. Twenty-ninth st. Thirtieth st. Egan ave. Fifth ave.	July 1, 1887 Aug. 12, 1887 July 2, 1887 June 15, 1887 July 5, 1887 July 5, 1887 July 20, 1887
Fifth ave Ac Forest ave De Indiana ave Th Indiana ave Tv Indiana a	lams st	Quincy st Egan ave Douglas ave Twenty ninth st Thirtieth st Egan ave Fifth ave	July 1, 1887 Aug. 12, 1887 July 2, 1887 June 15, 1887 July 5, 1887 July 5, 1887 July 20, 1887
Forest ave. Do ndiana ave Tl ndiana ave Tr ndiana ave Tv ndiana ave. Do ackson st. St ake st. Ca Salle st. Ra Portland ave Al Prospect pl. Vi Prairie ave. Tl	ouglas ave	Egan ave. Douglas ave. Twenty ninth st Thirtieth st Egan ave. Fifth ave.	Aug. 12, 1887 July 2, 1887 June 15, 1887 July 2, 1887 July 5, 1887 July 20, 1887
ndiana ave TI ndiana ave Tv ndiana ave Tv ndiana ave Tv ndiana ave De sackson st St ake st Ce a Salle st Ri Portland ave A Prospect pl Vi Prairie ave TI	wenty second st wenty second st wenty ninth st ouglas ave ate st	Douglas ave	July 2, 1887 June 15, 1887 July 2, 1887 July 5, 1887 July 20, 1887
ndiana ave	venty-ninth st ouglas ave ate st	Twenty-ninth st Thirtieth st Egan ave Fifth ave	July 2, 1887 July 5, 1887 July 20, 1887
ndiana ave	ouglas ave	Egan ave	July 2, 1887 July 5, 1887 July 20, 1887
ndiana ave. De lackson st. St. Lake st. Ce La Salle st. Ra A Portland ave A Prospect pl. Vi Prairie ave. Tl	ouglas ave	Fifth ave	July 20, 1887
Lake st. Ce La Salle st. Ra Portland ave A Prospect pl. Vi Prairie ave Tl	The state of the s	Fifth ave	2
A Salle st	entral ave		T. L. O 4000
A Salle st			July 3, 1887
Portland ave As Prospect pl Vi Prairie ave Tl	andolph st	Adams st	July 1, 1887
Prospect pl	rcher ave	Twenty-sixth st	Oct. 1, 1887
Prairie ave Tl	ncennes ave	Cottage Grove ave	June 14, 1887
	hirty-third st	Douglas ave	July 22, 1887
	ouglas ave	Egan ave	July 28, 1887
	anklin st	Fifth ave	June 20, 1887
	rcher ave	Twenty-sixth st	Nov. 13, 1886
	outh Park ave	E. line Johnson ave.	May 10, 1887
	roveland Park ave.	Lake Park ave	May 11, 1887
	ottage Grove ave	Lake Park ave	May 11, 1887
	ate st	Prairie ave	May 16, 1887
	ate st	Grand boulevard,	July 27, 1887
	earborn st	Franklin st	June 17, 1887
	arrison st	Twelfth st	June 10, 1887
			100

[†] Unfinished. * Private contract.

SOUTH DIVISION, 1887.

100100000	CONTRACTOR.	IMPROVEMENT.	SQ. YDS.	LIN. FT.
uly 14, 1887	Sackley, Daley & Co	Granite blocks	1,586.45	1,227.4
Nov. 1, 1887	Western Paving & Supply Co	Cedar blocks	2,438.45	1,231.8
Nov. 12, 1887	W. F. Hair	Cedar blocks	799.75	532.7
Nov. 26, 1887	James Lyman	Asphalt blocks	1,349.86	810.8
	Sackley, Daley & Co	Granite blocks	243.67	190.7
	J. B. Smith & Co	Cedar blocks	26,929.77	6,960.7
une 21, 1887	J. A. Sackley	Granite blocks	6,464.07	2,380.2
	J. B. Smith & Co	Cedar blocks	1,636.39	360.3
	Sackley, Daley & Co	Granite blocks	646.62	320.4
	A. J. McBean & Co	C. and F. Cedar blocks	1,607.25	566.1
une 27, 1887	Kinsella, Daley & Co	Cedar blocks	11,332.96	2,877.9
	James Lyman	C. and F. Cedar blocks	11,571.51	4,158.8
	R. F. Conway	C. and F. Cedar blocks	8,196.27	2,706.8
	A. J. McBean & Co	C. and G. Cedar blocks	8,201.29	4,966.3
	R. F. Conway	Granite blocks	2,958.97	796.0
une 14, 1887	James Conlon		948.21	222.0
	James Gonlon	Granite blocks	938.66	222.0
	R. F. Wilson	Macadam	8,216.45	1,946.0
nly 22, 1887	R. F. Conway	C. and G. Cedar blocks	10,027.08	3,096.4
	R. F. Conway	C. and G. Cedar blocks	12,800.13	3,901.9
	C. C. Railway and private	C. and G. Cedar blocks	2,516.89	809.0
uly 22, 1887	R. F. Conway	C. and G. Cedar blocks	8,338.35	2,582.
Jay 18 1882	Sackley, Daley & Co	§ Iron		268.
10v. 10, 1001	Dackiey, Daicy & Co	Granite blocks	6,074.77	1,059.
	James Conlon	Granite blocks,	13,194.63	3,154.
	North Division Railway Co.		5,444.48	1,531.
	J. B. Smith & Co	C. and F. Cedar blocks	5,434.17	1,630.
	J. B. Smith & Co	C. and G. Cedar blocks	1,425.51	418.
	R. F. Wilson	C. & G. Macadam.	5,346.90	1,266.
	R. F. Wilson		2,656.18	2,589.
uly 7, 1887	James Conlon		1,021.79	324.
	J. B. Smith & Co	Cedar blocks	4,648.58	1,020.
May 14, 1887	J. B. Smith & Co	Cedar blocks	2,289.47	729.
	J. B. Smith & Co	Cedar blocks	1,058.69	248.
	J. B. Smith & Co	Cedar blocks	1,081.21	467.
	Olaf Vider	Cedar blocks	6,455.63	1,461.
	R. F. Wilson,		8,049.50	2,263.
Aug. 2, 1887	R. F. Conway	Granite blocks	4,984.48	1,361.
Sept. 15, 1887	R. F. Wilson	Granite blocks	13,484.62	2,557.
			212,399.66	64,951.

Total miles, 12.30.

STREETS IMPROVED.

NAME OF STREET.	FROM	то	COMMENCED
lley bet. Washgtn Blvd. & Park ave	Page st	Wood st	May 25, 188
lley bet. Canal & Clinton sts.	Madison st	Washington st	May 24, 188
lley bet. Morgan & Aberdeen sts.	Rundell pl	Church ct	June 10, 188
	Loomis st	Laffin st	May 15, 188
lley bet. Clinton & Jefferson sts	Madison st	Washington st	May 31, 188
Hey bet. Washington & Madison sts	E. of May st., Block 48		June 1, 188
lley Block 1, Wright's	Elizabeth st	Willard pl	June 3, 188
lley Block 47, Carpenter's	May st	Ann st	June 1, 188
lley bet. Randolph & Lake sta		90" West	June 9, 188
	Washington st	Madison st	June 7, 188
lley bet. Centre ave. & Throop st.		Monroe st	June 23, 188
Alley, McNeil's, 6, 7 & 8 Wright's		Sheldon st	June 26, 188
Alley, McNeil's, 6, 7 & 8 Wright's		Sheldon st	June 28, 188
	Madison st	Washington st,	June 13, 188
lley bet. Washington & Randolph sts		Ada st	Nov. 2, 188
	Line of N. & S. Alley		Aug. 23, 188
	Barber st	Fourteenth st	June 10, 188
nn st	Carrell ava	A shor pl	Aug. 26, 188
	Carroll ave Huron st	Arbor pl Chicago ave	Aug. 30, 188 Aug. 3, 188
	Twelfth st	Fourteenth st	Aug. 3, 188 June 1, 188
	De Kalb st	Leavitt st	July 11, 188
	Fourteenth st	Wright st	July 15, 188
	Canal st	Halsted st	Aug. 14, 188
Blackhawk st	Elston ave	Paulina st	Aug. 15, 188
hicago ave	Wood st	Ashland ave	June 14, 188
	Morgan st	Aberdeen st	July 2, 188
	Halsted st	Centre ave	July 25, 188
	Flournoy st	Grenshaw st	Aug. 8, 188
	Harrison st	Maxwell st	July 12, 188
Chicago ave	Wood st	Leavitt st	June 20, 188
anal st	Madison st	Monroe st	Sept. 14, 188
anal st	Monroe st	Adams st	Sept. 14, 188
Dussold st	Jefferson st	Halsted st	Aug. 31, 188
Ewing pl.,	Hoyne ave	Leavitt st	May 24, 188
	Western ave	P., C. & St. L. R. R.	Apr. 13, 188
	Ashland ave	Wood st	Aug. 1, 188
	Indiana ave	Kinzie st	July 1, 188
	Blue Island ave	May st	June 28, 188
	Oakley ave	Campbell ave,	Aug. 17, 188
	Madison st	Van Buren st	Nov. 1, 188
	Blue Island ave	Ashland ave	June 18, 188
	Division st	Bryson st	July 19, 188 Sept. 14, 188
	Morgan st	Pratt pl Blue Island ave	Aug. 15, 188
	Madison st	Lake st	June 16, 188
	Blue Island ave	Ashland ave	July 15, 188
	Jackson st	Van Buren st	July 11, 188
	Fourteenth st	Wright st	July 1, 188
	Canal st	Jefferson st	Aug. 16, 188

WEST DIVISION, 1887.

FINISHED.	CONTRACTOR.	NATURE OF IMPROVEMENT.	SQ. YDS.	LIN. FT.
une 8, 1887	W. F. Hair	Cedar blocks	581.07	261.48
	Olaf Vider	Cedar blocks	801.50	400.75
une 13, 1887	W. F. Hair	Cedar blocks	240.00	120.00
une 6, 1887	W. F. Hair	Cedar blocks	2,083.51	1,087.00
une 2, 1887	Olaf Vider	Cedar blocks	805 80	402.90
	W. F. Hair	Cedar blocks	341.18	245.68
une 9, 1887	W. F. Hair	Cedar blocks	362.55	251.00
une 10, 1887	W. F. Hair	Cedar blocks	279.13	251.29
une 14, 1887	W. F. Hair	Cedar blocks	180 00	90.00
une 18, 1887	W. F. Hair	Cedar blocks	352.60	317.3
une 25, 1887	Sackley, Daley & Co	Cedar blocks	528.34	396.2
une 30, 1887	Sackley, Daley & Co	Cedar blocks	763.02	381.5
une 30, 1887	Sackley, Daley & Co	Cedar blocks	592.39	380.8
une 20, 1887	W. F. Hair	Cedar blocks	607.15	303.5
	R. F. Conway	Cedar blocks	937.68	326.0
Sept. 14, 1887	McAdam & Amberg	Cedar blocks	700.21	393.8
une 25, 1887	W. F. Hair	Cedar blocks	670.91	572.0
Aug. 29, 1887	McAdam & Amberg	Cedar blocks	1,258 05	347.4
	McAdam & Amberg		1,334.11	286.0
	A. J. McBean & Co		2,004.44	588.0
une 9, 1887	R. F. Conway	Cedar blocks	5,154.61	1,202.7
	Sack'ey, Daley & Co		547.95	136.9
	Sackley, Daley & Co			377.0
	W. F. Hair	C. & F. Cedar blocks	4,681.89	1,884.3
	R. F. Conway		9,744.28	2,448.6
une 21, 1887	I. B. Smith & Co	Cedar blocks	5,140.77	1,331.8
	Olaf Vider		1,322.72	661.3
	R. F. Conway		10,600.22	2,394.8
	McAdam & Amberg		6,173.04	1,826.7
	William Kinsella		7,971.05	2,902.3
Nov. 17, 1887	A. J. McBean & Co	C. & F. Cedar blocks	9,720 08	2,603.7
Nov. 11, 1887	James Conlon	G. Granite blocks.	2,310.85	422.0
Nov. 11, 1887	R. F. Wilson	G. Granite blocks.	2,842.58	505.3
Sept. 30, 1887	J. B. Smith & Co	Cedar blocks	2,837.98	1,155.6
Inly 12, 1887	James Lyman & Co	C & F Macadam	2,139,00	641.7
	J. V. McAdam & Co		5,645.14	1,239.7
Sept. 28, 1887	William Kinsella	C and F.		1,268.0
July 16, 1887	McAdam & Amberg	C. Cedar blocks	2,941.94	674.5
	Sackley, Daley & Co			1,560.0
	R. F. Conway		4,198.43	1,197.1
	Olaf Vider		6,725.32	1,585.8
	A. J. McBean & Co	Cedar blocks	12,040.22	2,743.5
	A. J. McBean & Co		2,477.37	642.9
	J. B. Smith & Co			925.9
	William Kinsella			238.2
	R. F. Wilson		4,484.60	1,345.3
Dec. 23, 188	R. F. Conway	C. and F	1,101.00	1,647.
Inly 15 188	M. J. La Bounty	. C. & F. Cedar blocks	1,730.53	480.
Inly 11 189	W. F. Hair	G. Cedar blocks	1,677.23	
Aug 20, 188	John Duffy & Sons	G Cedar blocks	3,034.69	
1115. 20, 100	John Duny of Bons,	. C. & F. Cedar blocks		

STREETS IMPROVED, WEST

NAME OF STREET.	FROM	то	COMMENCED
Kinzie st	Canal st	Clinton st	Aug. 27, 188
Kedzie ave	Canal Bridge	W. fork S. Br. Chicago Riv.	Nov. 10, 188
Cramer st	W. 48	Halsted st	July 7, 188
incoln st	Congress st	Polk st	June 10, 188
exington st	De Kalb st	Leavitt st	June 23, 188
ytle st	Macallister pl	Gilpin pl	Aug. 1, 188
oomis st		Fourteenth st	Aug. 31, 188
awndale ave		Twenty sixth st	Sept. 4, 188
Ailwaukee ave		Western ave	Nov. 4, 188
Miller st		Taylor st	July 8, 188
Miller st	Harrison st	Taylor st	July 5, 188
Aarshfield ave	Harrison st	Polk st	Aug. 22, 188
lorgan pl	The second of th	Aberdeen st	Sept. 1, 188
lorgan st	* 11	Milwaukee ave	Aug. 7, 188
lorgan st	Milwaukee ave	Chicago ave	Aug. 15, 188
ladison st	California ave	Homan ave	July 16, 188
lixon st	Polk st	Taylor st	June 20, 188
ewberry ave		Maxwell st	July 2, 188
loble st.		Indiana st.	Aug. 1, 188
ebraska st	Throop st	Loomis st	Aug. 4, 188
ewberry ave	Fourteenth st	Wright st	Oct. 3, 188
hio st	0	Desplaines st	Aug. 22, 188
Ohio st		Ashland ave	2 1 00 100
	Loomis st		
olk st		Robey st	Oct. 1, 188
eoria st		Randolph st	Aug. 13, 188
eoria st	Randolph st	Indiana st	Aug. 13, 188
eoria st	Madison st	Van Buren st	Oct. 27, 188
eoria st.		Harrison st	Oct. 31, 188
ark ave	Fall st	California ave	Oct. 18, 188
aulina st	Twelfth st	Fifteenth st	July 6, 188
obey st	Chicago ave	Division st	Sept. 4, 188
obey st		Ogden ave	June 27, 188
obey st	Indiana st	Chicago ave	Aug. 19, 188
obey st	North ave	Armitage rd	June 1, 188
undell pl		Aberdeen st	Nov. 9, 188
angamon st		Chicago ave	Aug. 22, 188
hirteenth st	Blue Island ave	Ashland ave	July 25, 188
hroop st		Blue Island ave	June 25, 188
hirteenth st		Wood st	June 25, 188
aylor st	Leavitt st	Campbell ave	Aug. 8, 188
l'aylor st	Ashland ave	Ogden ave	Sept. 24, 188
Thirteenth pl		Ashland ave	Oet. 15, 188
nion st	Erie st	Carroll ave	Aug. 29, 188
varren ave	Rockwell st	Sacramento ave	Apr. 28, 188
varren ave	Sacramento ave	Homan ave	June 9, 188
Varren ave	Rockwell st	Homan ave	Nov. 2, 188
Valnut st	Albany ave	Kedzie ave	July 10, 188
Vright st	Canal st	Halsted st	Aug. 30, 188

^{*} Private contract.
† Unfinished.

DIVISION, 1887.—CONTINUED.

FINISHED,	CONTRACTOR.	NATURE OF IMPROVEMENT,	SQ. YDS.	LIN, FT.
	R. F. Wilson		1,723.00	323.0
Dec. 29, 1887	Dolese & Shepard	Cinders		2,300.0
July 30, 1887	W. F. Hair	C. & G. Cedar blocks	2,838.43	1,150.9
June 14, 1887	J. B. Smith & Co	Cedar blocks	3,649.22	1,026.5
July 9, 1887	M. J. La Bounty	C. & F. Cedar blocks	2,598.77	760.3
Aug. 12, 1887	J. B. Smith & Co	C. & Cedar blocks.	1,138.79	297.7
	A. J. McBean & Co		5,098.72	1,126.3
	McAdam & Amberg		7,862.13	3,224.2
June 30, 1887	M. C. & J. Duffy	C. & F. Cedar blocks	8,923.36	3.511.7
July 11, 1837	A. J. McBean & Co	Cedar blocks	3,264.90	797.5
Aug. 16, 1887	Sackley, Daley & Co	C. and G	********	1,634.9
Aug. 25, 1887	W. F. Hair	C. & F. Cedar blocks	3,054.97	870.8
	McAdam & Amberg		1,293.61	646.8
Sept. 9, 1887	Sackley, Daley & Co	C. & F. Cedar blocks	3,520.23	820.5
	W. F. Hair		2,544.88	578.7
Oct. 14, 1887	M. J. La Bounty	C. & F. Cedar blocks	15,373.96	4,014.4
July 8, 1887	William Kinsella	Curbing		495.6
July 7, 1887	A. J. McBean & Co	Cedar blocks	3,503.35	820.8
Aug. 21, 1887	R. F. Conway	C. Cedar blocks	1,393.86	315.1
Sept. 14, 1888	James Lyman & Co	C. and F		600.0
Nov. 27, 1887	McAdam & Amberg	. C. and F		380.0
	A. J. McBean & Co		5,788.00	1,039.2
**** ******	A. J. McBean & Co	C. & F. Cedar blocks	7,591.56	1,798.0
une 30, 1887	J. V. McAdam & Co	C. & F. Cedar blocks	16,083.05	3,605.3
Aug. 16, 1887	J. B. Smith & Co	Cedar blocks	3,498.98	804.0
Aug. 24, 1887	A. J. McBean & Co	C. & Cedar blocks.	7,811.60	1,762.8
Nov. 10, 1887	J. B. Smith & Co	Cedar blocks	6,671.87	1,580.1
Nov. 8, 1887	Olaf Vider	. Cedar blocks	2,910.88	689.4
Nov. 21, 1887	McAdam & Amberg	C. & F. Cedar blocks	3,341.67	1,074.1
	R. F. Wilson			1,818.0
	R. F. Conway		11,579.00	2,599.4
uly 28, 1887	W. F. Hair	C. & F. Cedar blocks	985.96	217 2
Sept. 17, 1887	A. J. McBean & Co	C. Cedar blocks	7,585.71	1,641.8
Nov. 1, 1881	McAdam & Amberg	C. & F. Cedar blocks	11,695.89	2,576.1
Nov. 10, 1887	A. J. McBean & Co	Wd.,cb.and G. Cedar blocks	1,324.74	662.3
Nov. 0, 1887	R. F. Conway	G. & F. Cedar blocks	3,513.77	980 8
Aug. 10, 1887	J. B. Smith & Co	Cedar blocks	13,009.31	2,963.3
Aug. 20, 1007	R. F. Conway	Cedar blocks	12,912.03	2,847.0
aug. 31, 1887	Sackley, Daley & Co	., C. and F		1,202.0
sept. 24, 1881	McAdam & Amberg	V. & F. Cedar blocks	7,720.01	1,801.3
*********	McAdam & Amberg	C. & F. Cedar blocks		2,510.1
Sent 9 1997	James Lyman & Co	C. and F	9 000 74	3,260.0
May 10 1007	R. F. Conway	U., W. and F. Uedar blocks	8,990.74	1,697.7
Inno 19 1907	J. B. Smith & Co	Cedar blocks	8.992.75	2,621.9
Inna 12 1997	R. F. Conway	Cedar blocks	9,367.26	2,716.5
Inly 00 1007	R. F. Conway	C and F		5,338.5
ant 20, 1887	M. J. La Bounty	C. and F	P FOD 40	617.9
oche 90, 1001	R. F. Conway	C. Cedar blocks	1,029.16	1,757.5

STREETS IMPROVED, WEST

NAME OF STREET.	* FROM	то	COMMENCED.
Waller st Winthrop pl York st	Twelfth st	Fourteenth st Taylor st Ashland ave	Sept. 21, 1887 Aug. 6, 1887 Sept. 1, 1887

STREET DEPARTMENT.

DIVISION, 1887.—CONTINUED.

FINISHED.	CONTRACTOR.	NATURE OF IMPROVEMENT.	SQ. YDS.	LIN, FT.
Oct. 20, 1887 Dec. 15, 1887 Oct. 31, 1887	William Kinsella R. F. Conway William Kinsella	C. and F		1,263.02 795.40 563.70
			374,407.25	125,554.49
		Total Curbing and Filling		22,563.71
		Total Curbing		495.60
				125,554.49

Total miles, 23.78.

SUMMARY OF STREETS IMPROVED.

PAVEMENT.	North Division.	South Division.	West Division.	Total Miles.
Cedar Blocks		8.00 2.62	18.36	31.13 2.85
Macadam		1.53	.38	1.91
Sheet Asphalt	.22		.44	.22
Iron		.05		.05
Total Miles	4.99	12.35	19.41	36.75

In addition to the above, streets were planked to the extent of 1.56 miles. Curbing and filling on unpaved streets, 4.68 miles.

The following shows the kind of paving in each division of the city at the close of the year:

	Wooden Blocks.	Macadam.	Medina Stone.	Granite Blocks.	Sheet Asphalt.	Asphalt Blocks.	Gravel.	Cinders.	Iron.	Grand Total Miles.
North	49.79	1.19	.49	.04	2.19		.42	1.26		55.38
South	62.05	9.15	4.15	9.71	.38	4.11	4.38	.36	.05	94.29
West	132.64	19.78	.39	.23	.82		2.64	8.29		164.79
Total Less repaying done in 1887.	-		5.03	9.98	3.34	4.11	1	9.91		314.46 7.61
Total Miles	236.87	30.13	5.03	9.98	3.34	4.11	7.44	9.91	.05	306.85

The total number of miles of pavement laid each year, from the introduction of street paving in 1855 to the present date, is given in the following review:

YEAR.	Number of Miles.	YEAR.	Number of Miles.
855	1.72	1872	1.82
856	26	1873	10.19
1857	2.62	1874	9.07
1858	7.20	1875	11.49
1859	5.70	1876	10.50
1860		1877	12.29
861	69	1878	11.01
862	2.57	1879	6.83
863	2.00	1880	16.84
864	2.40	1881	24.52
865	2.03	1882	24.95
866	8.87	1883	22.49
867	11.37	1884	34.52
868	5.46	1885	38.06
869	18.32	1886	43.66
870	19.96	1887	36.75
1871	25.63	Total No. of Miles	431.79

Of this amount 124.94 miles have been repaved during the same period, which reduces the actual amount of improved streets within the corporate limits at this date to 306.85 miles.

LUMBER.

The following table shows in detail the amount of lumber used by the division foremen in the repairs and construction of aprons, culverts, crossings, sidewalk intersections and repairs, to which is added the amount of lumber used in the construction of sidewalks for which special assessments were levied:

	South Division.			V	EST DIVISION	NORTH DIVISION.			
For Water Hope		Lumbe	er.	Lumber.				Lumbe	er.
FOR WHAT USED.	No.	No. Feet Pine.	No. Feet Oak.	No.	No. Feet Pine.	No. Feet Oak.	No.	No. Feet Pine.	No. Feet Oak.
Aprons	986 367	74,767 64,123	66 72	1412	261,448 278,571		706 192	24,993	96
	134		660	660	255,240 11,505		16	1,555	
Steps & Railings, Sidewalk General Repairs		9,973		157	17,285 187,903		90	3,177 11,775	
Sidewalk Inter- sections				657	254,637		218		****
General Repairs.		37,148			55,322			28,918	601
Total		555,114	798		1,321,911			135,767	697

RECAPITULATION.

Total amount of pine lumber	.2,012,792	feet.
Total amount of oak lumber	1,495	**
To which is added the amount of lumber used in constructing		
sidewalks under special assessment	1,141,280	**
Grand total	3,155,567	feet.

REPAVING.

The amount of repairing done by the division foremen in the work of repairing improved streets, the replacing of pavement where openings were made by gas companies, water and sewerage departments, etc., and on account of street permits and general repairs, is given in the following; also the amount of repaving done by contractors for gas companies, etc., the work having been done under this department's supervision and the expense of same paid by the companies interested:

FOR WHAT PURPOSE.	NORTH DIV.	South Div.	WEST DIV.	TOTAL.
	Square Yds.	Square Yds.	Square Yds.	Square Yds.
General RepairsGas Companies	8,094 30 411	18,792 707 730	20,068 702 1,061	41,954 1,439 2,202
Sewer Department Fire Department Engineer's Department		108 615 149	207 328	328 943 149
Street Permits	1,500	3,445	6,139	11,084
Total	10,048	19,546	28,505	58,099

To be added to the amount of repaving done by contractors for Gas	
Companies, etc.	158,100
Grand total square yards	216,199

UNIMPROVED STREETS.

In the work of grading and ditching, the unimproved streets have been kept in as good, passable condition as the money at disposal would permit.

The total length of streets graded and ditched by the division foremen amounts in the aggregate to about 254 miles.

The following streets were planked (all of the material used being furnished by property owners in the localities mentioned).

Ullman street from Thirty-fifth to Thirty-ninth street	00	feet.
C street from Dominick street to Southport avenue 80	00	-
Locke street from Archer avenue to C. & A. R. R. tracks, 49	09	**
Locke street from C. & A. R. R. tracks to Hickory street 30	90	**
Wood street from Blue Island avenue to C., B. & Q. R. R. tracks 28	50	44
Hoyne avenue from Blue Island avenue to C., B. & Q. R. R. tracks. 28	50	**
Thirty-eighth street from Halsted street to Ullman street	00	11
Laurel street from Thirty-seventh to Thirty-ninth street 58	80	45
Halsted street from North Branch Chicago River to Division street 1,50	00	44
North Branch street from Cherry avenue to Division street 30	00	**
_	-	*
Total:	0	feet.

IMPROVED STREETS.

STREET CLEANING.

The contract for sweeping and cleaning the improved streets was awarded to John S. Cooper, on April 7th, 1887.

The work of cleaning commenced on April 9th, and was drawn to a close November 30th, 1887.

The contract price per mile was \$23.99, and the total cost of the work under the contract amounted to \$84,298.88.

The number of miles cleaned each month under contract during the years 1886 and 1887, and the cost of the work, is shown in the following comparative statement:

Miles. Miles. Cost. Cost. April 285.61 362.98 \$ 8,137 02 \$ 8,70 May 492.02 567.24 14,017 65 13,60 June 521.71 565.22 14,863 51 18,55 July 512.87 544.05 14,611 66 13,05 August 536.11 423.66 15,273 77 10,16 September 427.99 379.20 12,193 43 9,09 October 279.25 420.63 7,955 83 10,09
May 492.02 567.24 14,017 65 13,60 June 521.71 565.22 14,868 51 18,55 July 512.87 544.05 14,611 66 18,05 August 536.11 428.66 15,273 77 10,16 September 427.99 379.20 12,193 43 9,09 October 279.25 420.63 7,955 83 10,09
June 521.71 565.22 14,863 51 18,55 July 512.87 544.05 14,611 66 13,05 August 536.11 423.66 15,273 77 10,16 September 427.99 879.20 12,193 43 9,09 October 279.25 420.63 7,955 83 10,09
July 512.87 544.05 14,611 66 13,05 August 536.11 423.66 15,273 77 10,16 September 427.99 379.20 12,193 43 9,09 October 279.25 420.63 7,955 83 10,09
August. 536.11 423.66 15,273.77 10,16 September 427.99 379.20 12,193.43 9,09 October 279.25 420.63 7,955.83 10,09
September 427.99 379.20 12,193 43 9,09 October 279.25 420.63 7,955 83 10,09
October 279.25 420.63 7,955 83 10,09
TOTAL
November
December 21.04 599 42
Total

The number of miles of streets cleaned and cost thereof during the months of October, November and December, 1887, in sections not under contract, is shown in the following:

MONIMIA	IMPROVE	D STREETS.	Intersect'ns.			
MONTH.	Miles.	Cost.	Cost.	TOTAL COST		
October	25.27	\$.733 00	\$ 230 24	\$ 963 24		
November	101.43	3,636 43	699 37	4,335 80		
December	392.07	6,356 43	2,520 00	8,876 43		
Total	518.77	\$10,725 86	\$3,449 61	\$14,175 47		

Total amount expended during the year for street cleaning. \$98,474 35

In addition to the above, 90.36 miles of macadam paved streets were scraped and cleaned by district foremen of the department.

PERMITS FOR OPENING STREETS.

Thirteen hundred and thirty-six (1,336) permits were issued to sundry parties to open improved streets. A cash deposit, covering cost of replacing pavements, etc., to their original condition, was made on each permit.

This does not include openings made on improved streets by gas companies and sundry other companies under general deposit, where the work of replacing pavements was done by contractors, subject to inspection and acceptance of the department.

A summary is given herewith:

MONTH,	No. of Permits Issued.	MONTH.	No. of Permits Issued.
January	25	August	173
February	28	September	131
March	70	October	171
April	121	November	155
May	124	December	106
June	102		
July	130	Total	1336

Average number of permits issued each month, 111. Number of permits issued for opening improved streets on which deposits were made (not including openings by Gas Companies and other corporations under general deposits).	1,336
Number of permits issued for opening unimproved streets	3,153
Total	4,489
Amount of cash deposit made during the year	28,726 50
Amount retained as costs for repaying and inspection	10,618 24
Amount rebated to depositors,	17,778 26
Average amount of cash deposit	21 51
Average amount retained for costs	7 95

PERMITS FOR USE OF STREETS.

Twelve hundred and nine (1,209) permits were issued to sundry parties to occupy streets for the purpose of depositing materials thereon during the construction of buildings.

The number of permits issued monthly, the amount of cash deposits, and revenue received for use of streets is given in the following statement:

MONTH.	No. of Permits Issued.	MONTH.	No. of Permits Issued.
January	40	August	148
February.	78	September	119
March	149	October	86
April	119	November	65
May	166	December	63
June	75		
July		Total	1,209

Average number of permits issued each month, 101.

Amount of cash deposit made during the year 1887	14,555	00
Amount retained for use of street as per Sec. 1,104 Municipal Code.	4,963	00
Amount rebated to depositors	6,247	00
Average amount of cash deposits	12	04
Average amount retained for use of streets	4	10

PARKS.

The money at the disposal of the department for the care of parks was used in their maintenance, including the repairing and construction of fences, fountains and sidewalks, painting outhouses, seats, bridges, lamp posts, etc.

Special improvements were made as follows:

Douglas Monument Square, wire fence\$	170	50
Ellis Park, concrete sidewalk	358	27
Washington Square, new fountain, basin repaired, painting, etc	703	08
Campbell Park, trees, plumbing, etc	188	00
Holstein Park, expended for filling	575	40
Total	.995	25

With these exceptions, the ordinary work of taking care of the parks makes up the sum of the expense as shown in the book-keeper's financial statement.

HOUSE MOVING.

Licenses were issued to forty-six house-movers.

During the year nine hundred and thirty-five permits were granted to move buildings. Of this number eight hundred and seventy-eight were frame, and fifty-seven brick buildings, the total frontage aggregating 18,086 lineal feet.

A general review of the work apportioned by divisions, the number of buildings moved each month, and the cash receipts from this source, is shown in the following tabulated statement:

		Dı	VISIO	IN.					Н	RIGHT	rs.		
No. of Permits		South.		Feet Frontage.	Average	Frame.	Brick.	1-Story.	2-Story.	3-Story.	Cash Receip		
January February March April May June July August September October November December	16 46 120 115 130 98 81 91 68 83 53	2 9 30 28 20 32 14 14 6 10 13	2 3 10 10 24 15 15 19 29 28 15 7	77 86 51 52 58 33	307 892 2,106 2,307 2,543 1,902 1,603 1,765 1,401 1,618 1,004½ 637½	19.19 19.39 17.55 20.06 19.56 19.40 19.79 19.39 20.60 19.49 18.95 18.75	42 114 110 126 93 78 83 58 77	6 5 4	9 21 57 53 56 44 35 54 39 46 20 19	53 44 35 29	23138122411	\$ 56 166 436 411 442 338 257 271 204 279 197 110	000000000000000000000000000000000000000
Total	935	183	177	575	18,086	19.34	878	57	453	454	28	\$3,167	00

CHICAGO, December 31st, 1887.

MR. GEO. W. DEAL,

Superintendent of Streets.

DEAR SIR:—I herewith present my Annual Report of Street Lamps, for the year 1887. At the close of the year there were, including those on bridges, viaducts, parks and boulevards, 17,528 gas lamps, and 4,018 oil lamps in the city, as follows, to wit:

GAS LAMPS.

Division.	No. in City, January 1, 1887.	No. erected during year 1887.	Total,
North	2,796	128	2,924
South	4,185	417	4,602
West	9,005	997	10,002
Total	15,986	1,542	17.528

OIL LAMPS.

Division.	No. in City, Jan. 1, 1887.	No. erected during year 1887.	Total.	Less number discontinu'd where gas mains have been laid during the year 1887.	Total.
North	618	8	626	23	603
South	1,285	150	1,435	221	1,214
West	2,145	367	2,512	311	2,201
Total	4,048	525	4,573	555	4,018

The following statement shows the number of gas lamps in the city at the commencement and close of each year, from the organization of the Department of Public Works in 1876, to date:

WEST DIVISION.			SOUT	H DIVIS	SION.	NORTH DIVISION.			
YEAR,	No. of Lamps Jan. 1.	No. added.	Total.	No. of Lamps Jan. 1.	No. added.	Total.	No. of Lamps Jan. 1.	No. added.	Total.
1876	5,160			2,965	92	3,057	2,095	39	2,134
1877	5,362	97	5,439	3,057	47	3,104	2,134		2,168
1878	5,439	42	5,481	3,104	17	3,121	2,168		2,18
1879	5,481	38		3,121	1	3,122	2,183		2,24
1880	5,519	137	5,656	3,122		3,153	2,241	30	2,27
1881	5,656	196	5,852	3,153	18	3,171	2,271	50	2,321
1882 1883	5,852	289	6,141	3,171	27	3,198	2,321	9	2,330
1884	6,141	1,004	6,554	3,198 3,453	255 133	3,453 3,586	2,330	54 165	2,549
1000	7,558	594	7,558 8,152	3,586	223	3,809	2,384 2,549	59	2,608
1886	8,152	853		3,809	376	4,185	2,608	188	2,790
1887	9,005	997	10,002	4,185	417	4,602	2,796	128	2,924

Total number added during the past eleven years:

North I	Divisio	on.									٠.										9.				4.1				829
South	**																·				. ,								1,637
West	44	,																									 		4,842
																													7,308
Number	of g	gas	1	an	np)5	iı	1 (cit	y	J	an		1,	1	87	6.					٠.			-	 			10,220
Total no	umber	ro	f	ga	15	la	m	ps	s i	n	ci	ty	1	De	c	en	ab	eı	. 5	31:	st,	1	88	37			 	٠,	17,528

The following statement shows the number of oil lamps erected in the city each year from their introduction in 1880 to the present date:

-	WES	T DIVIS	ION.	SOUT	H DIVIS	SION.	NORTH DIVISION.			
YEAR.	No. of Lamps Jan. 1.	No. added.	Total.	No. of Lamps Jan. 1.	No. added.	Total.	No. of Lamps Jan. 1.	No. added.	Total.	
1881	257		257	97		97	220		220	
1882	257	675	932	97	501	598	220	315	535	
1883	932	262	1,194	598		598	535	36	571	
1884	1,194	125	1,319	598	189	787	571		571	
1885	1,319	790	2,109	787	111	898	571	63	634	
1886	2,109	272	2,381	898	447	1,345	634	50	684	
1887	2,145	56	2,201	1,285	Less 70	1,214	618	Less 15	608	

Total number added during the past six years:

West I	ivisio	on	1,944
South	44		1,127
North	64		373
			3,444
To	tal n	umber of Oil lamps in city January 1, 1881	574
To	tal n	umber of oil lamps in city December 31, 1887	4,018

The number of lamps glazed to replace broken glass was 45,737, of which 25,511 were in the west division, and 20,226 in the north and south divisions; the average per day being about 70 in the west division and 55 in the north and south divisions combined. In this work there was used 162 boxes of

door lights of glass, 191 boxes top lights and 774 boxes side lights.

In glazing the new lamps for posts erected during the year, there was used 41 boxes of door lights, 96 boxes of top lights and 125 boxes of side lights. The total number of boxes of glass used was 1,389, of 50 feet each.

The number of old lamps repaired and painted was 896; of these 593 were for the west division and 303 for the north and south divisions.

Two thousand six hundred and twenty-eight (2,628) new lamps were made. Included in this number are fifteen hundred and ninety-three (1,593) guide lamps.

All of the lamps now used by the city are of the "Stewart Patent."

Glass street signs have been put in most of the corner gas lamps, and tin signs on the oil lamps. The contract will be completed within a few weeks.

Respectfully submitted,

JOHN STEWART, Superintendent of Street Lamps.

SIDEWALKS.

The number of miles of sidewalks rebuilt during the year, including wood, stone and concrete, also miles of sidewalk repaired is shown in the following table:

DIVISION.	M	ATERIAL		Total	Sidewalks	Grand Total Miles.	
DIVISION.	Wood.	Stone.	Concrete.	Miles.	repaired.		
North	7.89	1.29	.46	9.64	15.21	24.85	
South	13.67	6.77	1.16	21.60	7.57	29.17	
West	93.64	1.77	.50	95.91	13.51	109.42	
Total	115.20	9.83	2.12	127.15	36.29	163.44	

In addition to the above there has been constructed 42.50 miles of sidewalk on ground not heretofore covered by sidewalks, distributed in each division as follows:

North Division	. 4.00	miles.
South Division	. 6.00	**
West Division	.32.50	**

Making a total of 205.94 miles of sidewalk built, rebuilt and repaired, during the year.

Of the above there has been built of wooden walks by the city, under special assessment, 10.25 miles.

The total number of miles of sidewalks under the control of the city and the West, South and Lincoln Park Commissioners at the close of the year is given in the following summary:

UNDER CONTROL	M.	ATERIA	L.	TOTAL	Increase over the year 1886.							
OF.	Wood. Miles.	Stone. Miles.	Concr't. Miles.	MILES.	Wood. Miles.	Stone. Miles.	Concr't. Miles.	Total. Miles.				
City	895.09	86.61	15.68	997.38	108.50	9.44	2.07	120.01				
South Park Com'rs		9.79		9.79			.,,					
West Park Com'rs		8.53		8.53		2.47		2.47				
Lincoln Pk. Com's		1.25		1.25		.50		.50				
	895.09	106.18	15.68	1016.95	108.50	12.41	2.07	122.98				
Wood sidewalk replaced by	9.51				9.51							
Total miles in	1007.44	Total	increa	ise	113.47							

Acquired 15.18 miles of sidewalk by annexation of Sections 25 and 36, making total increase, 128,65 miles.

During the year the department constructed stone sidewalks as follows:

On Park avenue, from Ashland avenue to Lincoln street. On Dearborn avenue, from Chicago avenue to North avenue.

On Schiller street, from North Clark street to Dearborn avenue.

On Indiana avenue, from Eighteenth street to Egan avenue.

On Michigan avenue, from Washington street to Adams street.

On Vernon avenue, from Thirty-first street to Thirty-fourth street.

On Calumet avenue, from Twenty-sixth street to Thirty-first street.

for which a special assessment was levied, the work being done under contract.

STREET RAILWAYS.

During the year the different companies have laid pavement on the portion of the streets occupied by their tracks as follows:

PAVEMENT.

CORPORATION.	Granite Block. Square Yards.	Cobble Stone, Square Yards,	Wood Blocks. Square Yards.	Total Square Yards
Chicago City R'y Co	26,650			26,650
Chicago Pass. R'y Co	1,281	15,401	3,319	20,001
N. Chicago St. R'd Co	9,216	35,704		44,920
Totals	37,147	51,105	3,319	91,571

Street Railway extensions were made by the different companies as follows:

NORTH CHICAGO STREET RAILROAD COMPANY.

ON	FROM	то	Lineal Feet.	REMARKS.
Illinois st	Clark st	Wells st	800	Double track, Cable
La Salle st	Illinois st	Randolph st	2,205	Double track, Cable.
La Salle st	Randolph st	Monroe st	1,385	Single track, Cable.
Monroe st	La Salle st	Dearborn st	800	Single track, Cable.
Dearborn st	Monroe st	Randolph st	1.375	Single track, Cable.
Randolph st	Dearborn st	La Salle st	800	Single track, Cable.
		Randolph st	420	Double track, Horse.
Dearborn st	Monroe st	Polk st	3,056	Double track, Horse,
Dearborn st	Randolph st	Monroe st	1,375	Single track, Horse.
Kinzie st	State st	Market st	2,446	Double track, Horse.
Market st	Kinzie st	Michigan st	299	Double track, Horse.
Division st	Clybourn av.	Milwaukee av.	7,410	Double track, Horse.
	Clark st		12,470	
Total			34,841	6.58 miles.

STREET DEPARTMENT. 313

CHICAGO CITY RAILWAY COMPANY.

ON	FROM	то	Lineal Feet.	REMARKS.
Thirty-fifth st	State st	Ullman st	7,920	Double track.
Ullman st	Thirty-first st	Thirty-fifth st	2,640	Double track.
Total		 	10,560	2.00 miles.

CHICAGO PASSENGER RAILWAY COMPANY.

on	FROM	то	Lineal Feet.	REMARKS.
Harrison st	Franklin st	Sherman St	786	Double track.
Twenty-first st.	At Ashland ave	nue intersection.	100	Double track.
Total			886	0.16 mile.

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ED BY STREET	NORTH CHICA
TED BY STREET RAILWAY TRACKS OPERATED A	NORTH CHICAGO STREET RAILROAD COMPANY
PIED BY STREET	NORTH CHICA
PIED BY STREET	NORTH CHICA
UPIED BY STREET	NORTH CHICA
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JIST OF STREETS OCCUPIED BY STREET	NORTH CHICA

SOLLED BY THE	t. REMARKS.	Single track. Single track. Single track. Single track. Single track. Cable, single track.
CONT	Lin. Feet.	15 043 17191
STREETS OCCUPIED BY STREET RAILWAY TRACKS OPERATED AND CONTROLLED BY THE NORTH CHICAGO STREET RAILROAD COMPANY.	CHARACTER OF PAVEMENT.	Granite Medina stone Cobble stone Cobble stone Cobble stone Cobble stone Cobble stone Granite Granite Cobble stone Granite Cobble stone
STREET RAILW H CHICAGO STR	TO	Fullerton avenue. Fullerton avenue. Fullerton avenue. Racine avenue. Clark street. Clybourn avenue. Milwankee avenue Randolph street. Polk street. Racine avenue. Wells street. Wells street. Wells street. Monroe street. Webster avenue. Randolph street. Michigan street. Michigan street. Michigan street. Division street. Downard avenue. Division street. Wells street. Division street. Division street. Division street. La Salle street. Division street. Division street. La Salle street. La Salle street. La Salle street. La Salle street. Division street.
ETS OCCUPIED BY	FROM	Washington street. Clark street. Lincoln avenue. Lincoln avenue. State street. Clybourn avenue. Lake street. Randolph street. Monroe street. Lincoln avenue. Clybourn avenue. Clark street. Market street. Market street. Market street. Clark street. Clark street. Market street. Market street. Miniois street. Miniois street. Miniois street. Michigan street. Michigan street. Chicago avenue. Market street. Chicago avenue. Market street. Clark street. Clark street. Clark street. Clark street. Clark street. Chicago avenue. Market street. Clark street.
LIST OF STREI	NO	Clark street. Chicago avenue. Chybourn avenue. Capter street. Division street. Division street. Division street. Dearborn street. Dearborn street. Dearborn street. Halsted street. Illinois street. Illinois street. Kinzie street. Lincoln avenue. La Salle street. La Salle street. La Salle street. Market street. Monroe street. Monroe street. North avenue. Racine avenue.

5,228 11,601 Cable N. of Ills. st. 3,961 Single track. 137,523 26.05 miles.	LLED BY THE	REMARKS.	Cable, single track. Cable. Cable. Cable. Single track. Cable, Cable, Cable,
5,228 11,601 3,961 137,523	CONTRO	Lin. Feet.	450 11,900 1,320 1,320 16,160 10,985 18,607 4,951 14,388 9,960 9,960 11,970 11,970 11,450 11,
Cobble stone, granite next rail	LIST OF STREETS OCCUPIED BY STREET RAILWAY TRACKS OPERATED AND CONTROLLED BY THE CHICAGO CITY RAILWAY COMPANY.	CHARACTER OF PAVEMENT.	Granite Granite Granite Granite Granite Granite Granite Granite Granite and cobble stone Granite
Center street Clark street Racine avenue	STREET RAILY CHICAGO CITY	To	Wabash avenue Egan avenue I wenty second st Indiana avenue Egan avenue T wenty second st. T wenty second st. T wenty second st. T wenty ninth street. T hirty first street. T hirty mith street. T hirty mith street. Stanton avenue Egan avenue Kana avenue Wabash avenue Wabash avenue Wabash avenue Wabash avenue Egan avenue Wabash avenue Ulman street Ulman street
Division street Randolph street Lincoln avenue.	ETS OCCUPIED BY	FROM	State street Lake street State street State street Wabash avenue Eighteenth street Washington street State street Archer avenue Hanover street Archer avenue Thirty-first street Thirty-first street Cottage Grove ave Cottage Grove ave Cottage Grove ave Cottage Grove ave Cottage svenue Cottage street Archer avenue State street Archer avenue Cottage street
Sedgwick street Webster avenue	LIST OF STRE	NO	Lake street. State street. Wabash avenue. Twenty-second street. Indiana avenue. Clark street. Archer avenue. Hanover street. Twenty-ninth street. Buller street. Ashland avenue. Thirty-first street. Pitney avenue. Pitney avenue. Stanton avenue. Stanton avenue. Stanton avenue. Stanton avenue. Van Burent havenue. Van Buren street. Van Buren street. Van Buren street. Uninan street.

LIST OF STREETS OCCUPIED BY STREET RAILWAY TRACKS OPERATED AND CONTROLLED BY THE WEST CHICAGO STREET RAILROAD COMPANY.

REMARKS.	Single track Harrison to 12th Single track Yan Bu. to 12th Single track.
Lin. Feet.	17,343 8,184 1,845 1,845 1,645 1,675 1,675 1,330 8,890 11,330 11,330 11,330 11,330 11,350 11,350 11,350 18,490 18,490 18,210 18,210 18,210 18,210 18,210 18,210 18,210 18,210 18,210 18,210 18,210 18,210 18,210 18,210 18,210
CHARACTER OF PAVEMENT.	Cobble stone and granite. Cobble stone. Cobble stone granite next rail to Halsted. Cobble stone. Cobble stone. Cobble stone. Granite to Fareful balance wood blocks. Cobble stone. Granite to Fareful balance wood block. Cobble stone.
To	Western avenue Humbold Park. Leavitt street. Chicago avenue. Chicago avenue. Western avenue. Blackhawk street. Holt street. North avenue. Shahand avenue. Clybourn place. Wood street. St. John's place. Fortieth street. St. John's place. Twelfth street. Kedzie avenue. Madison street. Twelfth street. Twelfth street. Canalport avenue. Halsted street. Canalport avenue. Halsted street. Canalport avenue. Western avenue. Western avenue. Western avenue.
FROM	Lake street Milwaukee avenue. Milwaukee avenue. Milwaukee avenue. Milwaukee avenue. Milwaukee avenue. Milwaukee avenue. Moble street. Blackhawk street. North avenue. State street. North avenue. State street. Michigan avenue. State street. Michigan avenue. State street. Wichigan avenue. State street. Wichigan avenue. State street. Wichigan avenue. State street. Wichigan avenue. State street. Michigan avenue. State street. Michigan avenue. State street. Michigan street. Lake street. Canal street. Indiana street. Harison street. Harison street. Halsted street.
NO	Milwaukee avenue. North avenue. Division street. Leavitt street. Indiana avenue. Noble street. Blackhawk street. North avenue. Clybourn place. Lake street. Nandoph street. Randoph street. Randoph street. Yan Buren street. State street. State street. Glinton street. Twelfth avenue. Twelfth avenue. Twelfth avenue. Twelfth street. Clinton street. Ganal port avenue. Harrison street. Canal street. Canal street. Ganal street. Ganal street. Bue Esland avenue. Harrison street. Bue Esland avenue. Eighteenth street.

49,254 9.33 miles.

8,985 16,425 3,115 1,850 247,813 46.94 miles.	LED BY THE	REMARKS.	
8,985 16,425 3,115 1,850	CONTRO	Lin. Feet.	8,045 3,005 3,005 11,349 11,470 1,775 8,990 5,780
Blue Island avenue. Wood block Douglas Park Gobble stone to Trelith balance wood block Van Buren street Cobble stone Madison street	LIST OF STREETS OCCUPIED BY STREET RAILWAY TRACKS OPERATED AND CONTROLLED BY THE CHICAGO PASSENGER RAILWAY COMPANY.	CHARACTER OF PAVEMENT.	Cobble stone and granite. Cobble stone and granite. Cobble stone and granite. Cobble stone Cobble stone Cobble stone Gobble stone, redar block between frack. Gobble stone, light place to 14th st. mendam. Gobble stone, wood block between tracks.
Blue Island avenue. Douglas Park Van Buren street Madison street	STREET RAILWA	TO	Center avenue Franklin street Adams street Western avenue Twenty-first street. Western avenue Twefith street
Eighteenth street Blue Island avenue. Wood block Randolph street Douglas Park (bbble slone to Tre Lake street Van Buren street Cobble stone Van Buren street Madison street Wood block	TS OCCUPIED BY	FROM	Michigan avenue Michigan avenue Washington street. Washington street. Sherman street. Adams street. Adams street. Blue Island avenue. Harrison street.
Leavitt street Ogden avenue Western avenue Kedzie avenue	LIST OF STREE	ON	Adams street Washington street. Franklin street. Michigan avenue Harrison street Desplaines street Center avenue Twenty-first street.

STREET RAILWAYS-NORTH DIVISION.

	FROM	TO	Lin. Feet,		OPERATED BY
Bridge		Fullerton avenue	13,533	Cable north of Illinois street North Chicage Street R. R. Co.	North Chicage Street R. R. Co.
Clybourn avenue Division street.	street	Fullerton avenue	11,191		10 11
Lincoln avenue	avenue	Racine avenue	5,280	Single track	"
State street	****	Clybourn avenue	2,957		,,
:		Bridge	4,780		" "
"ullerton avenue Lincoln avenue.		Kacine avenue		Single track	
Lincoln avenue.		Racine avenue		Single track.	**
Clybourn	e	Fullerton avenue	5,653	***************************************	:
Market street.		Wells street	860	Single track	: ;
Clark street.		Wells street	800	Cable	" "
State street		Market street	2,446		** **
Center street.,		Fullerton avenue	3,806		
Illinois street		Tunnel	1,196	Cable	" "
Chicago avenue.		Webster avenue	9,264		11 11
Kinzie street.	treet	Michigan street	566		
Michigan street.	n street	Illinois street	283	Single track	** ***
Illinois street	treet	Chicago avenue	2,013	***************************************	
Chicago avenue		Division street	2,643	Single track	46. 46.
Market street		Wells street	866		
Clark street		Bridge	6,840		10. 10
Clybourn		Fullerton avenue	5,966	Single track,	27 25
Bridge	*** ********	Division street	6,039		27 25
Division	Division street	Center street	5,228		
Chicago avenue.	avenue	Division street	2,643	Single track	12 17
Bridge		Clark street	10,541	of Illinois	37 37
Webster avenue Lincoln avenue,	avenue	Racine avenue	3,961	Single track	27 27
Lincoln avenue	avenue	Clark street	780	***	
			117.978	117.278 22.21 miles.	

STREET RAILWAYS-SOUTH DIVISION.

OPERATED BY	Chicage City Railway Co.	
	Cable, single track Chicago City Railway Go. Cable	162,633 30.80 miles.
Lin. Feet.	450 11,900 11,900 1,820 16,180 16,985 18,607 4,951 4,951 14,388 9,960 8,780 6,780 11,450 11,450 11,450 11,450 11,450	162,633
то	Wabash avenue Egan avenue Indiana avenue Indiana avenue Egan avenue Egan avenue Iwestern avenue Twenty-accond st Western avenue Thirty-first street. Thirty-first street Pitney avenue Pitney avenue Egan avenue Stanton avenue Wabash avenue Egan avenue Ullman street Ullman street Egan avenue Egan avenue Ullman street Egan avenue Ullman street	
FROM	State street. Lake street. Lake street. State street. State street. Wabash avenue. Eighteenth street. Washington street. Archer avenue. Hanover street. Twenty-ninth street. Archer avenue. Twenty-ninth street. Thirty-first street. Thirty-first street. Thirty-first street. Stake street. Cottage Grove ave. State street. State street. Archer avenue. State street. Archer avenue. Cottage Grove ave. State street. Archer avenue. State street. Archer avenue. State street. Archer avenue. State street.	
NO	Lake street. State street. Wabash avenue. Twenty-second street Eighteenth street. Indiana avenue. Clark street. Archer avenue. Hanover. Twenty-ninth street. Buller street. Ashland ave. Thirty-first street. Pitney ave. Thirty-first street. Pitney ave. Thirty-first street. Stanton avenue. Stanton avenue. Stanton avenue. Stanton avenue. Wentworth avenue. Undigna avenue. Undigna avenue. Undigna avenue. Undigna avenue. Undigna avenue. Undigna avenue.	

STREET RAILWAYS -- SOUTH DIVISION, -- CONTINUED.

ON	FROM	то	Lin. Feet.		OPERATED BY
Clark street. Dearborn street. LaSalle street. Monroe street. Randolph street. State street.	Washington street. Lake street. LaSalle street. Dearborn street. Lake street. Randolph street.	Bridge. Polk street. Monroe street. Dearborn street. LaSalle street. Bridge.	1,510 2,334 800 800 570 1,060	I track, cable, Randolph to Monroe street Gable, single track, Randolph to Monroe. Cable, single track. Cable, single track.	North Chicago Street R. R. Co.
Lake street. Randolph street. Madison street. Van Buren street. Fifth avenue	State street. Michigan avenue. State street. State street. Randolph street. Lake street.	Bridge. Bridge. Bridge. Bridge. Polk street.	2,585 2,585 2,583 2,620 3,450 1,350	11,985 2.27 miles. 2,585 8,570 8,580 2,620 3,450 1,850	West Chicago Street Railroad Co.
Michigan avenue Washington street Franklin street Adams street	Washington street Michigan avenue Michigan avenue Sherman street	Adams street Franklin street. Harrison street. Bridge.	16,405 1,849 3,005 8,200 3,720 900	16,405 3.12 miles. 1,349 Chicago Passenger Railway Co. 3,720 Chicago Passenger Railway Co. 3,720 Chicago Passenger Railway Co. 6,720 Chicago Passenger Railway Chicago Passenger	Chicago Passenger Railway Co.
	4		12,174	12,174 2.81 miles. 208,197 88.50 miles.	

STREET RAILWAYS-WEST DIVISION.

NO	FROM	TO	Lin. Feet.		OPERATED BY
Milwaukee avenue.	Lake street	Western avenue	17,343	West Chicago Street Railroad Co.	West Chicago Street Railroad Co.
North avenue	Milwaukee avenue	Humboldt Park	5,333		,,
Chicago avenue	Milwaukee avenue	Leavitt street	7,300		25
Leavilt street	Indiana street	Chicago avenue	1,845		
Indiana street	Milwaukee avenue	Western avenue	10,665		
Lake street	Bridge,	Fortieth street	24,385		
Kandolph street	Bridge.	Fortieth street	24.060		
	Bridge	Kedzie avenue	15,870		
	Milwaukee avenue	Blackhawk street	1,675		n n
Blackhawk street	Noble street	Holt street	673	***************************************	22 22
Holt streat	Blackhawk street	North avenue	1,835		
North avenue	Holt street,	Ashland avenue	665	the state of the s	
Ashland avenue	North avenue	Clybourn place	3,020		
Clybourn place	Ashland avenue	Wood street	1,300		
Division street	Milwaukee avenue	California avenue	8,184		: 3
Twelfth street,	Fullon street	Twelfih street	7,180	Single track Harrison to 19th	
Tefferson street	Van Buren street	Meagher street	5,748	Single track, Van Buren to 12th	
Canal street,	Harrison street	Canalport avenue.	0000		
Canalport avenue	Canal street	Harrison street	8,490		
Meagher street	Jefferson street	Canal street	845	Single track	т п,
Halsted street	Indiana street	South branch river	16,210		
O'Neill street	Halsted street	West	18 510		
Blue Island avenue.	Harrison street	I asvitt straat	9 940	Single track Wood to Leavitt	
Leavitt street,	Eighteenth street,	Blue Island avenue	3,985	Single carry, mood to reaster.	10 01

STREET RAILWAYS-WEST DIVISION.-CONTINUED.

ON	FROM	To	Lin. Feet.		OPERATED BY
Ogden avenue Western avenue Kedzie avenue	Randolph street Douglas Park Lake street Van Buren street	Douglas Park Van Buren street Madison street	16,425 8,115 1,850	T	West Chicago Street Railroad Co.
			231,408	231,408 43.82 miles.	
Adams street Desplaines street Harrison street Center avenue Twenty first street.	Bridge	Center avenue Harrison street Western avenue Twenty first street Western avenue Twelfth street.	4,325 1,775 13,570 8,990 5,780 2,640		Ohicago Pastenger Bailway Go.
			87,080	87,080 7.02 miles.	
North avenue	Bridge	Milwaukee avenue	5,630		. North Chicago Street R. R. Co.
			8,260	8,260 1.57 miles.	
			876,748	376,748 52.41 miles.	

STREET DEPARTMENT.

STREET RAILWAYS-RECAPITULATION.

CORPORATION.	North Div.	South Div.	West Div.	Total miles.
North Chicago Street Railroad Co. Chicago City Railway Co	22.21	2.27 30.80	1.57	26.05 30.80
West Chicago Street Railroad Co Chicago Passenger Railway Co		3.12 2.31	43.82 7.02	46.94 9.33
Total miles	22.21	38.50	52.41	113.12

CORPORATION.	Horse track.	Cable track.	Total miles.
North Chicago Street Railroad Company Chicago City Railway Company West Chicago Street Railroad Company Chicago Passenger Railway Company	20.41 21.54 46.94 9.38	5.64 9.26	26.05 30.80 46.94 9.38
Total miles	98.22	14.90	113.12

Respectfully submitted,

GEO. W. DEAL,

. Superintendent of Streets.



MAP DEPARTMENT.

CHICAGO, January 11, 1888.

HON. GEORGE B. SWIFT,

Commissioner of Public Works.

SIR:—I respectfully submit the report of Map Department for the year 1887, accompanied by a map showing the growth of the city of Chicago, from a village to its present dimensions, with the latest proposed annexed territory, sections 36 and 25, and the special described parts of the town of Cicero and the village of Hyde Park.

FELIX V. BUSCHICK.

Superintendent of Map Department.

MAPS AND PLATS MADE.

For new subdivisions	220
For opening, widening and vacating streets	
and alleys	176
For special assessments, streets and law de-	
partments	2,724
For miscellaneous purposes	151
Total plats made	3,271

THE "TOWN OF CHICAGO,"

(John H. Kinzie, Gurdon S. Hubbard, Ebenezer Goodrich, John K. Boyer and John S. C. Hogan, first trustees), was incorporated by act of February 11, 1835. It comprised all that territory covered by sections 9 and 16, north and south fractional section 10, and fractional section 15, in town 39, north range 14 east of the third principal meridian; "Provided, that the authority of the board of trustees of the said town of Chicago shall not extend over the south fractional section 10, until the same shall cease to be occupied by the United States."

THE "CITY OF CHICAGO,"

Incorporated by act of March 4, 1837, comprised "the district of country in the county of Cook, etc., known as the east ½ of the southeast ¼ of section 33, town 40, range 14 east, and fractional section 34, town 40, north range 14 east; also the east ¼ of sections 6, 7, 18 and 19, all of fractional section 3, and of sections 4, 5, 8, 9, and fractional section 10, (except the southwest fractional ¼ thereof, occupied as a military post, until the same shall become private property), fractional section 15, sections 16, 17, 20, 21, and fractional section 22, town 39, north range 14 east."

FIRST EXTENSION OF CITY LIMITS.

Act of February 16, 1847, provides: That the district of country in the county of Cook, etc., known and described as follows, to wit: All that part of township 39, north range 14, east of the third principal meridian, which lies north of the north line of sections 27, 28, 29 and 30 of said township, and the east ½ of section 33, town 40, north range 14 east, and fractional section 34, town 40, north range 14 east, shall hereafter be included in, constitute and be known by the name of "City of Chicago."

SECOND EXTENSION OF CITY LIMITS.

Act of February 12, 1853, provides: That the corporate limits and jurisdiction of the city of Chicago shall be and the same are hereby extended so as to embrace and include within the same the several tracts of land hereinafter described, which shall be deemed parts of the divisions of the said city named in connection therewith, as follows:

North Division.—All those parts of sections 31 and 32, town 40, north range 14 east, lying east of the center of the north branch of the Chicago River and the west half of section 33, in same township and range.

South Division.—All of fractional section 27, town 39, north range 14 east, and so much of the shore

and bed of the lake as lies within one mile east of said section, and all of that part of sections 28, same township and range, lying south and east of the south branch of the Chicago River.

West Division.—All those parts of sections 28, 29 and 30, town 39, north range 14 east, lying north of the south branch of the Chicago River.

THIRD EXTENSION OF CITY LIMITS.

Act of February 13, 1863, provides: The corporate limits and jurisdiction of the city of Chicago shall embrace and include within the same all of township 39, north range 14 east of the third principal meridian, and all of sections 31, 32, 33 and fractional section 34, township 40, north range 14 east, together with so much of the waters and bed of Lake Michigan as lies within one mile of the shore thereof, and east of the territory aforesaid.

FOURTH EXTENSION OF CITY LIMITS.

Act of February 27, 1869, provides: That the territorial limits of the city of Chicago shall be and are hereby extended as follows: That part of section 30, township 40, north range 14 east, which lies west of the north branch of the Chicago River; sections 1, 2, 11, 12, 13, 14, 23, 24, 25, 26, and that part of sections 35 and 36 lying northwest of the center of the

Illinois and Michigan Canal, all in township 39, north range 13 east, shall be and are hereby added to the city.

The city including the first, second, third and fourth extensions covers thirty-six square miles.

FIFTH EXTENSION.

Act of May 16, 1887, provides, That the territorial limits of the city of Chicago shall be and are hereby extended as follows: That section 36, town of Jefferson, township 40, north range 13, shall be and is hereby added to the city. One square mile.

(PROPOSED) SIXTH EXTENSION.

Act of November 21, 1887, provides: That, as by an election held on the eighth day of November, 1887, a portion of the town of Cicero was annexed by the city of Chicago, the corporate limits and jurisdiction of the city of Chicago shall embrace and include within the same the part of the town of Cicero described as follows: All that part of sections 35 and 36 in township 39, north range 13 east of the third principal meridian, lying southeast of the center of the Illinois and Michigan Canal. Six and one-fourth square miles.

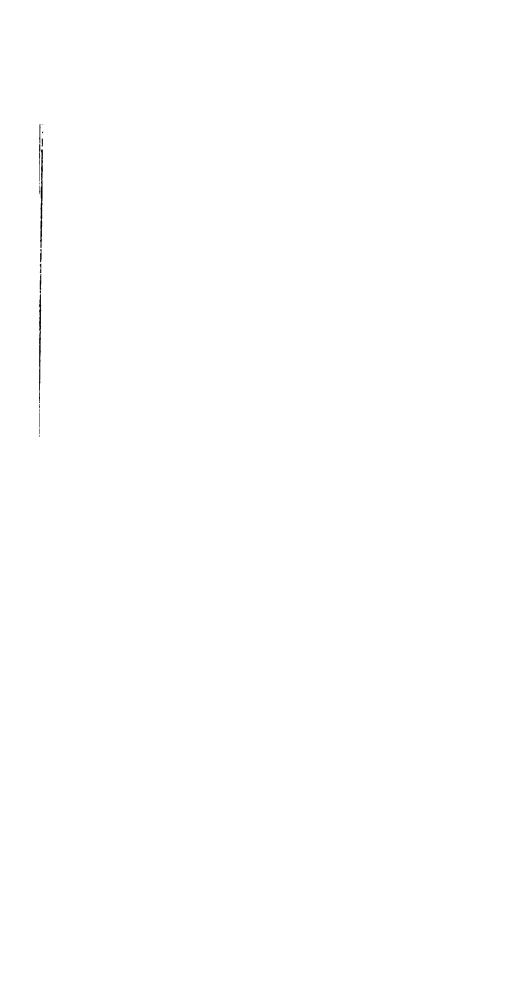
ALSO :

Act of December 5, 1887, provides: That the part of the town of Jefferson known as section 25, township 40, north range 13 east of third principal meridian, voted by a regular election on the eighth day of November, 1887, be and is hereby added to the city of Chicago. One square mile.

ALSO :

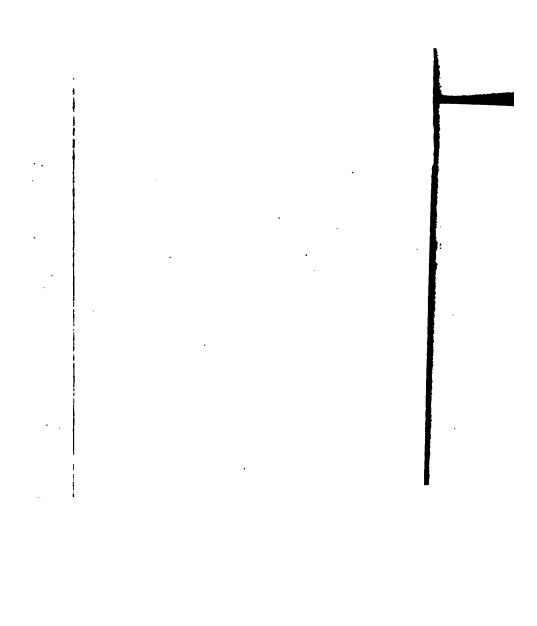
Whereas, by a legal election held on the eighth day of November, 1887, and by a resolution of the Board of Commissioners of Cook County, passed December 3, 1887, certain territory hereinafter described, formerly forming a part of the town of Hyde Park, was declared to be annexed to the town of South Chicago, be it ordained by the City Council of the city of Chicago: That all of fractional section 2, sections 3 and 10, fractional sections 11, 12 and 13, sections 14, 15, 22 and 23, fractional section 24, and sections 25, 26, 27, 34, 35 and 36, all in township 38, north range 14 east of third principal meridian; and fractional sections 19, 29 and 30, section 31, and fractional section 32, all in township 38, north range 13 east of third principal meridian; also, sections 1, 2, 3, 13 and 12 north, and sections 12 and 13 south of the Indian boundary line, and sections 24, 25 and 36, in township 37, north range 14 east of third principal meridian; also, fractional sections 5 and 6 north, and fractional sections 5 and 6 south of Indian boundary line, fractional sections 7, 8 and 17, sections 18 and 19, fractional sections 20 and 29, sections 30, 31 and 32, in township 37, north

range 15 east of third principal meridian, all in Cook county, State of Illinois, shall be and are hereby added to the city of Chicago. Thirty-four and three-fourths square miles. All making the total area of the city of Chicago seventy-nine square miles.



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BUREAU OF SPECIAL ASSESSMENTS.

CHICAGO, December 31, 1887.

HON. GEORGE B. SWIFT,

Commissioner of Public Works.

DEAR SIR:—I submit herewith, in tabular form, a statement of Special Assessments made in this Department during the past year, with a summary of the estimated cost of the same, also the amount of Special Assessments made in each year during the past twenty-seven years.

The annexation of the new territory made during the present year will necessarily increase the labor of this Department to a large degree, and I again respectfully call attention to the suggestions made in my last annual report, and bespeak your assistance in carrying them out.

STATEMENT OF ASSESSMENTS FOR WOODEN BLOCK PAVEMENT.

AMOUNT.	2 148 28 148 28 148 28 148 28 148 28 148 28 18 18 18 18 18 18 18 18 18 18 18 18 18
TO	Lake Park avenue. Homan avenue. Wood street. Usion Park Addition. Wright street. Douglas avenue. Egan avenue. Indiana street. Arbor place. Cottage Grove avenue. Loivision street. Ashland avenue. Kinzie's Addition. West Jackson street. West Jackson street. West Shore Drive. If'l' ¼, 8es. 2l, 39, ll, etcept Blks, 51 & 88. Lake Shore Drive. Lake Shore Drive. Get Van Buren street. Sec. 17, 39, 14. Superior street. Superior street. Superior street. West Taylor street. West Taylor street. West Indiana street. West Indiana street. Worth avenue. North avenue.
FROM	Cottage Grove avenue. Ashland avenue. Ashland avenue. In Block 2. West Fourteenth street. Thiritieh street. Thiritieh street. Carcoll avenue. Vincennes avenue. Chicago avenue. Laffin street. In Block 4. West Monroe street. State steet. West Monroe street. Of C. T. new subd. of Blks. in N. W. Dearborn avenue. C. T. subd. of W. ½ & W. ½ N. E. ¼ Ontario street. C. T. subd. of W. ½ & W. ½ N. E. ¼ Ontario street. West Jakinzie street. West Polk street. West Polk street. West Polk street. West West Polk street. West Division street. Page street to Wood street West Division street. West Division street.
NAME OF STREET.	Thirty-second court. Warren avenue. West Chicago avenue Crittenden street The North Alley Johnson street. Indiana avenue Indiana avenue Indiana avenue Indiana avenue Larrabee street. Prospect place. Larrabee street. The North ½ Egan avenue. The Alley. Irving avenue. The Alley in Block 18. St. Clair street Lytle street. Lytle street. Lytle street. Lytle street. Lytle street. Canal street. Miller street. Green street. Miller street. Green street. Hurbut street. Hurbut street.
No. of Warrant	7444 7458 7464 7474 7474 7474 7495 7495 7495 7693 7653 7653 7658 7658 7658 7658 7658 7658 7658 7658

16,806 19,831.4.6 19,831.4.6 19,831.4.6 10,708.4.2.9 17,054.4.1.9 12,905.78 11,718.77
Centre avenue Leavit street. Prairie avenue Gentre avenue Milwaukee avenue Homan avenue Grensbaw street Ashland avenue Twenty-ninth street. State street. Paulina street. State street. Paulina street. South Blue Island avenue Western avenue Western avenue Kobey street. South Branch Chicago River. Twenty-sixth street. Schiller street K. R. Grounds. West Polk street. Campbell avenue West Polk street. Campbell avenue North Centre avenue Crittenden street. Campbell avenue Crittenden street. Wood street. Wood street.
Halsted street. Wood street. State street. Halsted street. Halsted street. California svenue. Rockwell street Flournoy street Flournoy street Flournoy street Gottage Grove avenue. Twenty-second street. West Kandolph street. Lincoln street. North Branch Chicago River Elston avenue. North Branch Chicago River Lononis street. North avenue. South Fork South Branch Chicago River Loomis street. West Polk street. North avenue. Grant street. West Polk street. West Halsted street. West Moore street. Grant street. Ashland avenue. Elizabeth street. Gakley avenue. Elizabeth street. Ashland avenue.
West Congress street. West Chicago avenue. Thirtieth street. West Bolk street. West Madison street. West Lake street. Claremont avenue. Hastings street. College place. Indiana avenue. Peoria street. Peoria street. North ¼ Egan avenue. Peoria street. Blackhawk street. Blackhawk street. West Division street. Irwing avenue. Robey street. Archer avenue. Robey street. Archer avenue. Roby street. Archer avenue. Bryson street. Grenshaw street. Grenshaw street. Hunt street. Grenshaw street. En yangana street. Bryson street. Grenshaw street. En yangana street. Bryson street.
888 1986 1

STATEMENT OF ASSESSMENTS FOR WOODEN BLOCK PAVEMENT.

No. of Warrant	NAME OF STREET.	FROM	то	AMOUNT.
1622	East and West Alley	Block 36	Section 17	\$1,487.27
792	Carl street	La Salle street	North Wells street	
798	Park avenue	Falls street	California avenue	7,867.0
795	Chestnut street	North State street	Rush street	2,814.0
797	Wallace street,	Archer avenue	Thirty-first street	48,520.1
1798	Fifth avenue	Twenty-sixth street	Thirty-first street	27,569.7
	George street	***************************************	Carpenter street	6,885.9
208	West Ohio street	***********	Lincoln street	15,179.9
-	Irving avenue	***********	West Harrison street,	6,452.4
	Loomis street	h street	West Twenty first street	10,627.4
802	Ontario street	***************************************	600 feet East	4,277.5
1807	Loomis street,	West Twelfth street	West Fourteenth street	8,050.2
808	Bismarck court	Noble street	Eastern Terminus	5,999.4
	St. Clair street	Indiana street	Ontario street	3,322
818	Hammond street,	Menomonee street	Wisconsin street	4,114.4
818	Ayers court	West Huron street	West Chicago avenue	4,037.6
1850	Miller street	Gurley street	West Polk street	2,280.
822	North Clark street	Chicago River	Chicago avenue	23,699.
1893	Lexington street	Western avenue	Campbell avenue	4,844.
	Flournoy street	Western avenue	Campbell avenue	4,928.
	South La Salle street	Twenty-sixth street,	Thirty-first street	22,631.
	Sibley street	Gilpin place	Macalister place	2,478.
	Pratt place	Hoyne avenue	Western Terminus	4,936.
088	Aberdeen street	West Taylor street	West Eleventh street	2,988.4
1881	Cicero court	West Congress street	West Harrison street	2,782.
1832	Scott street	150 ft. East North State street	Stone street	2,825.
888	Union street	Carroll avenue	West Erie street	15,208.0
7887	Lawndale avenue		West Twenty sixth street	18,437.
	Alley	ler street	Bet. La Salle ave. and Wells st	787.5
	Staunton street	West Madison street	West Lake street	m/d
120	West I hirteenth street	Ashland avenue	Wood street	7,208.88

17,581.58 1,880.65 13,284.97 8,675.37 8,785.59	2,245.78 1,486.03 2,001.51 2,492.70 456.77	20,630.60 10,820.20 1,569.51 1,776.07 4,063.74 4,995.16	12,394,26 18,970,74 10,119,20 3,869,98 1,951,46 2,132,23 2,875,83 7,254,76	12,596.30 1,462.26 11,462.26 13,912.81 2,825.63 7,735.64 6,875.29 7,858.97
Ashland avenue. Dearborn avenue. Halsted street. West Van Buren street.	Guilley street. Bet Michigan avenue and Indiana avenue. Bet Washington bont, and West Randolph street Bet Growland avenue and lake Park avenue. N. E. 4, Sec. 17, 39, 14. Bet, Mobils street and Morth Gentre avenue.	Worth avenue. North avenue. Bet, Groeland avenue and lake Park avenue. Bet, Corolage Grove are, and Groveland aven. Betchen avenue. Ashland avenue.	Noble street. West Twenty-second street. Oakley avenue. Rockwell street. Lytle street Wright street. Bet. Fifth ave. and Sherman st Wood street.	North avenue Sec. 17, 89, 14 Centre avenue Waller street West Fourteeth street. Wight street. Western Terminus Wood street.
Blue Island avenue. North Clark street. Cleveland avenue. West Madison street. West Van Buren street.	West Harrison street Fourteenth street to Sixteenth street. Elizabeth street to Ada street Thirty-second ct. to Thirty third st. Blk. 16, C. T. subd. of W. ½ & W. ½ Bismarck court to West Huron street	west Division street. Clybourn avenue. Thirtieth st. to Thirty-first st. Thirty-second st. Thirty-third st. Webster avenue.	North Centre avenue. West Eighteenth street. Robey street. Campbell avenue. Centre avenue. West Fourteenth street. Van Buren street to Harrison street. shiland avenue.	Sigel street. Blk. 86, C.T. subd, W. ½, &c. Blue Island avenue. Blue Island avenue. Blue Island avenue. West Twelfth street. West Fourteenth street. Halsted street. Ashland avenue. Centre avenue.
Thirteenth place. Oak street. Belden avenue. Peoria street.	Miller street. Alley. Alley. North Alley.	Oriens street. Mohawk street. Alley. Aulisy. Burling street. Jane street.	Fry street. Johnson street. Monroe street. Flournoy street. Arthington street. Newberry avenue. Alley. West Fourteenth street.	

STATEMENT OF ASSESSMENTS FOR WOODEN BLOCK PAVEMENT.

AMOUNT.	\$ 13,668.96 22,136.28 11,315.98	6,035.34	8,534.25 8,909.58	10,176.78 5,101.62 8.131.40	7,122.61	7,477.81	18,758.90 8,200.91	25,548 21 9,250.21	6,416,19	18,297.99	7,815.15 8,785.85 2,148.77	35,135,11 35,135,11
то	Ashland avenue. Ogden avenue. West Fifteenth street.	Halsted street	Cornell street.	C., St. L. & P. R. R. West Indiana street.	North avenue.	Archer avenue	Racine avenue	North avenue	Blue Island avenue	western avenue West Division street	West Fourteenth street. West Harrison street. Wright street.	West Futeenth street
FROM	Blue Island avenue. Wood street. West Twelfth street.	Canal street	West Chicago avenue	West Lake street	Schiller street.	Wentworth avenue	Halsted street.	West Division street.	Waller street.	West Chicago avenue	West Twelfth street	West Fourteenth street Ogden avenue West Madison street.
NAME OF STREET.	Henry street	West Fifteenth street	Rose street.	Artesian avenue	Wieland street.	Twenty second place	Centre street.	Leavitt street.	Frank street.	Samuel street. McGregor street.	Waller street	Margaret street
No. of Warrant	7989 7990 7991	8050	8076	8078 8108 8114	8115	8118	8120	8142	8148	8150	8160 8161 8169	8171 8175 8175

	9.445 77		•	18,164.86	11,870.05		6,241.15			\$1.822.548.84
C., St. L. & P. R. R	Egan avenue	Halsted street	North avenue	North avenue	Bradley street	Robev street.	North avenue	600 feet East.	Chicago avenue	
	West Monroe street		Division street		Milwaukee avenue.			St. Clair street.		
:	:	Boston avenue		Larrabee street.	Cleaver street	:		Erie street.	Pine street	Total

STATEMENT OF ASSESSMENTS FOR MISCELLANEOUS STREET AND ALLEY IMPROVEMENTS.

-	Warrant	NAME OF STREET.	FROM	TO	AMOUNT.
7489	Granite	Alley	Sixteenth street to Righteenth street,	bet. State street and Wabash avenue	\$ 6.681.
7527	Macadamizing	street	State street		22,120.
7543	Curbing and niling		N. Market street	Western terminus	2,063.
7559	Curbing and filling.	W. Thirteenth street	Ashland avenue	Wood straat	10 059
7560	Curbing and filling		North avenue	Willow street	8.849
7618	Grading and planking		1 29 C. T. Subd'n		2,204
7624	Curbing and filling	reet,	Throop street	Ashland avenue	9,413.
7639	Curbing and filling		Ashland avenue	Wood street	12,452.25
10001	Curbing and niling.	street	Ashland avenue	Wood street	13,293.
7888	Curbing and ming		Houng custom	Sacramento street	8,801.
7692	Macadamizing.	W. Indiana street.	Tinkham avenue.	Crawford avenue	4 873
7695	Curbing and rem. trees		Twenty-ninth street.	Thirtieth street	9.084
7717	Curbing and filling	and street	Ashland avenue	Western avenue	61,507
7788	Curbing, grading and macadamizing.	***********	Douglas avenue	Egan avenue	25,931.
7736	Curbing and macadamizing	Homan avenue	W. Madison street	W. Lake street	8,566.
7754	Granite	Washington street	Dearborn street	Franklin street	22,270.
7763	Sheet asphalt	Carpenter street	W. Madison street	Washington boulevard	5,551.
2222	Grading and planking	Alley	W. Harrison street to W. Polk street,	bet, Jefferson street and Law avenue	1,181.
7778	Grading and planking	Alley	Wisconsin street to Centre street, bet	Mohawk and Hurlbut atreets	1,080.
6777	Grading and planking	Alleys	Block 14	Newberry's Addition	.080
7782	Curbing and filling	Plum street	Loomis street,	Laffin street	1,311.
7784	Grading and planking		Gurley street, 100 ft. N	bet. Miller and Sholto sts.	226.60
0011	Grading and planking		Augusta street to Noble st.	het. Milwankee ave. and Wade st	2,376
77.84	Curbing	eet	Sigel street	North avenue	2,777.
2806	Curbing and hiling	Winght street	Halsted street	Western terminus	11,121.
7825	Asphalt blocks	Alley	Courteenth to Nivteenth etracte Lat	Wakash and Michigan against	7,600
7827	Curbing and filling.	W. Eleventh street	Morgan street	May street.	8.486
7839	Curbing and filling.	Loomis street	W. Fourteenth street.	Blue Island avenue	10 348

11,981-45 26,867.50 13,677.48 4,417.90 6,572.70 6,572.70 6,466.60 8,502.43 4,923.83 10,648.83 22,260.91 4,533.33 8,708.84 21,325.96 5,510.24 3,568.08 69,220.65 44,940.60 4,982.93 1,452.10 1,452.10	\$678,218.94
Blue Island avenue. Ashland avenue. Wood street. M. Mahah and Michigan avenue. Ogden avenue. Ogden avenue. Michigan and Prairie avenues. Michigan and Islamet avenues. Michigan and Islamet avenues. Halsted street. W. Adams street. Jefferson street. Jefferson street. Homan avenue. Homan avenue. Central Park avenue. Chicago river. Central Park avenue. L. S. & M. S. R. R. Paulina street. Redzie avenue. Hoyne avenue.	
Waller street. Centre avenue Ashland avenue.	
Frank street W. Fifteenth street Alley W. Twelfth street Rumsey street Alley Alley Alley Alley Blackhawk street Canal street Armitage avenue Walnut street Fulton street	
Curbing and filling. Curbing and filling. Curbing and filling. Asphalt blocks. Asphalt blocks. Asphalt blocks. Asphalt blocks. Asphalt blocks. Asphalt blocks. Curbing and filling. Granite. Asphalt blocks. Curbing and filling. Curbing and grading.	Total
7840 7841 7842 7842 7906 7906 7910 7910 8122 8122 8122 8140 8124 8140 8140 8140 8140 8140 8140 8140 814	

STATEMENT OF ASSESSMENTS FOR LAYING PRIVATE DRAINS.

Warrant	NAME OF SIKERI.	FROM	то	AMOUNT.
7441	Margaret street	West Fourteenth street	West Fifteenth street	\$ 105.
7448	McReynolds street	Ashland avenue	Wood street	153
7443	Cleaver street	Milwaukee avenue	Bradley street	152.
7445	Gilpin place	Centre avenue	Loomis street	384
7446	Paulina street	West Twelfth street	West Fifteenth street	359
7447	Wood street	West Twelfth street	West Fifteenth street	314.
7448	West Fifteenth street	Morgan street	Centre avenue	336
7449	West Thirteenth street	Ashland avenue	Wood street	496.
7462	Henry street	Morgan street	Blue Island avenue	285
7478	West Fifteenth street	Centre avenue	Wood street	2.196.
7478	Dayton street	North avenue	Belden avenue	1,909.
7479	West Thirteenth street	Wood street	Ogden avenue	2,218.
7480	Hoyne avenue	West Division street	Bryson street	635.
1481	Fox place	Noble street	Elston avenue	115.
7482	Dickson street	street	North avenue	864.
1488	Morgan street	street	Wright street	281.
1484	Lytle street	Macalister place	West Taylor street,	197.
7485	Claremont avenue		Grenshaw street	675.
7486	Gurley street	Blue Island avenue	May street	153
7487	George street	Elston avenue	Carpenter street	115.
1213	Morgan street	Milwaukee avenue	West Chicago avenue	222
7514	College place	Rhodes avenue	Cottage Grove avenue	264.
1515	Forest avenue	Thirty-eighth street	Egan avenue	978.
7516	West Superior street	Noble street	Wood street	936.
7517	Thirtieth street	Prairie avenue	Wentworth avenue	830.
7518	Fry street.	North Centre avenue	Noble street	132.0
1519	Wilcox avenue	C. & NW. R. R.	Sacramento avenue	1.899.5
7520	West Eleventh street	Throop street	Ashland avenue	832.0
7533	Egan avenue	Cottage Grove avenue	Wentworth avenue	2,214.0
1534	South LaSalle street	Twenty-fourth street	Twenty-fifth street	170.0
(999)	Trying avenue	West Monroe street	West Jackson street	247

280.00 672.00 644.00 644.00			277.50 120.00 344.00 240.50	1,973.00 912.00 90.00 242.00	874-90 878-00 128-00 874-00 830-00	1,364.00 475.00 105.00 624.00
Lincoln street. Halsted street. Halsted street. Halsted street. Halsted street. Is Northern Terminus.	Leavitt street. Wood street. Wood street.	Ashland avenue. West Taylor street. Kedzie avenue. Leavitt street	Its Western Terminus. Wright street North avenue Halsted street	Paulina street North avenue Arbor place. Loomis street	Wood street. Armitage avenue. West Van Buren street. Wood street. Lake Shore Drive. Grand Boulevard.	Ashland avenue. West Indiana street. S. line Block 2 of M. and others } Sub. W. ‡ S. W. ‡, Sec. 18, 39, 14 {
Milwaukee avenue. Canal street. Jefferson street Jefferson street Canal street. North avenue	Ashland avenue Ashland avenue Ashland avenue West Harrison street	Laffin street. West Polk street. Albany avenue. De Kalb street.	Halsted street. West Fourteenth Clybourn avenue Larrabee street. West Polk street	Elston avenue. West Division street. Carroll avenue. Throop street.	Ashanda avenue West Clybourn place West Jackson street Ashland avenue Dearborn avenue State street West Kinge	Blue Island avenue Fulton street. West Polk street. Waller street.
Ellen street. Barber street Kramer street Dussold street West Fifteenth street Shober street	West Chicago avenue. Hastings street. West Fourteenth street	York street. Irving avenue. Wahnt street. Lexington street.	Wright street. Newberry avenue Hurbbut street. Vedder street.	Blackhawk street Leavitt street Ada street Nebraska street Burling street	Wood street Wood street Irving avenue Thirteenth place Delaware place. Thirty-seventh street.	Henry street Morgan street Irving avenue Frank street

STATEMENT OF ASSESSEMNET FOR LAYING PRIVATE DRAINS-CONTINUED.

AMOUNT.		440.00
TO	Armitage avenue Homan avenue Western avenue Wentworth avenue Wentworth avenue West Indiana street West Indiana street Homan avenue Pratt place Western avenue Lincoln street California avenue Western avenue West Twenty first street C., St. L. & P. R. R. Western Terminus Belden avenue Eastern Terminus West Harrison street Campbell avenue Kockwell street Campbell avenue Rockwell street Robey street	West Division street
FROM	North avenue. California avenue. Lincoln street. State street. Centre avenue. West Randolph street. West Randolph street. Elston avenue. Ashland avenue. Hoyse Tajor street. West Tajor street. Western avenue. Wood street.	West Chicago avenue
NAME OF STREET.	Robey street West Madison street West Division street West Twenty-third street Feoria street Homan avenue Homan avenue Hamilton avenue Hamilton avenue Hamilton street Hamilton street Hamilton street Hamilton street Hamilton street Hamilton street Bauwans street Archer avenue Loomis street Archer avenue Archer avenue Fritt place Baurling street Hismarck court Kendall street Irving avenue Wast Congress street Fournoy street Fournoy street Fournoy street Fournoy street Fournoy street Hermitage avenue	Rumsey street,
No. of Warrant	47777 47777 47777 47777 47777 47777 47777 47777 4777	8226

Eleventh street Ray street Fay street Leavist street West Davis street West Davis street West Davis street West Davis on street North avenue North avenue Rabland avenue Roch Halsted street West Harrison street West Madison street West Harrison street West Madison street West Harrison street West Madison street West Madison street West Madison street West Polk street West Davision street West Division street West Division street West Division street West Statemare Total Total
nue. nue. nue. eet. t.
Eleventh street Fay street. Leavit street Dania avenue Seymour street Cork street. Snell street Fullerton avenue Cicero court. Colorado avenue California avenue Albany avenue Paulina street Gross terrace. Samuel street Samuel street Samuel street Sudder street. Butterfield street Butterfield street Total.

STATEMENT OF ASSESSMENTS FOR LAYING WATER SERVICE PIPES.

Warrant	NAME OF STREET.	FROM	TO	AMOUNT
7450	West Fifteenth street	Center avenue	Wood street	\$3,042
7451	Morgan street	Fulton street	West Indiana street	793
7452	Delaware place,	Dearborn avenue	Lake Shore Drive	1,231
7453	McReynolds street	Ashland avenue	Wood street	167
7455	Thirteenth place	Wood street,	Lincoln street	422
7456	Canal street,	West Twelfth street	Sixteenth street Viaduct	280
7457	Nixon street,	West Polk street	West Taylor street	858
7458	Webster avenue	Halsted street	Clybourn avenue	152
7461	Irving avenue	West Polk street,	West Taylor street	806
7465	York street,	Laffin street	Ashland avenue	877
7466	Shober street	North avenue	Northern Terminus	597
7467	Crittenden street	Noble street,	Currier street	117
7468	West Chicago avenue	Ashland avenue	Leavitt street	3,153
7469	Prospect place	Vincennes avenue	Cottage Grove avenue	156
7470	Paulina street	West Twelfth street	West Fifteenth street	567
7488	West Fifteenth street	Canal street	Halsted street	196
7507	Irving avenue	West Jackson street	West Van Buren street	281
7508	Claremont avenue	Flournoy street	Grenshaw street	1,093
2209	Wilcox avenue,	C. & N. W. R. R.	Sacramento avenue	3,036
7510	Cleaver street	Milwaukee avenue	Bradley street	288
7511	Sigel street	Sedgwick street	Hurlbut street,	585
7513	Hurlbut street	Clybourn avenue	North avenue	906
7524	Fox place	Noble street	Elston avenue	255
7529	Brigham street	Ashland avenue	Wood street	471
7580	North Wells street	Division street	North avenue	282
7581	Hoyne avenue	Division street	Bryson street,	683
7582	Thirteenth place	Ashland avenue	Wood street	800
7544	West Superior street	Noble street	Wood street	1,519
7545	Thirtieth street	Prairie avenue	Wentworth avenue	644
7546	Barber street,	Canal street	Halsted street	159
7547	West Fourteenth street.	Ashland avenue.	Wood street	1.189

28.26. 28.26. 28.26. 28.28. 28.28. 28.28. 28.28. 28.28. 28.28. 28.28. 28.28. 28.28. 28.38.	6,978.9
West Polk street Halsted street. Blue Island avenue. Weitworth avenue. Willow street. Wright street. Ogden avenue. Woest Indiana street. Noble street. West Indiana street. West Fifteenth street. West Fifteenth street. Wast Fifteenth street. May street. May street. May street. May street. Word street. Ashland avenue. Ashland avenue. Ashland avenue. Cottage Grove avenue Cottage Grove avenue. Cottage Grove avenue. Shorth avenue. Ashland avenue. Ashland avenue. Shorth avenue. Egan avenue.	Lincoln street. Lincoln street. West Tackson street. My History Sub, W. 4 S. W. 4 Sec. 18, 39, 14. Wentworth avenue. Blue Island avenue.
West Harrison street Morgan street. Cottage Grove avenue. Cottage Grove avenue. Albany avenue. West Harrison street. West Harrison street. Worth Center avenue. Halsted street. Carroll avenue. Ashland avenue. West Fourteenth street. Blue Island avenue. West Twelfth street. Wood street. Elston avenue. Elston avenue. Elston avenue. Calipin place. West Division street. Rhodes avenue. Slate street. West Division street. Milwaukee avenue. Slate street. Molwaukee avenue. Slate street. Milwaukee avenue. Slate street.	Milwaukee avenue. West Monroe street. West Polk street. S. Line of Block 2 of M. State street. Waller street.
Marshfield avenue. Kramer street. Henry street. Burling street. Wahnut street. Newberry avenue Robey street. Green street. Wright street. Was street. Mas street. Mast street. Mast street. Mast street. Margaret street. Hastings street. Mood street. Wood street. Gulley street. Hastings street. Gulley street. Gulley street. Loavit street. Elackhawk street. Elackhawk street. College place. It hirty-seventh street. Loavit street. College place. It hirty-seventh street. West Thirteenth street. West Eleventh street. West Eleventh street. West Eleventh street. West Eleventh street. Girard street. Girard street.	street.
7548 7559 7559 7559 7559 7558 7558 7558 755	7699 7700 7701 7707 7705

STATEMENT OF ASSESSMENTS FOR LAYING WATER SERVICE PIPES.

No. of Warrant	NAME OF STREET,	FROM	то	AMOUNT.
7451	West Fifteenth street.	Center avenue.	Wood street,	\$3,042.05
7452	Delaware place.	Dearborn avenue	Lake Shore Drive	1,231.60
7455	Thirteenth place	Wood street	Lincoln street	422,70
7456	Canal street	pet	Sixteenth street Viaduct	580.70
7457	Webster avenue	West Polk street.	West Taylor street	329.90
7461	Irving avenue.	West Polk street	West Taylor street	908 60
7465	York street	Laffin street,	Ashland avenue	877.20
7466	Shober street	Noth avenue	Northern Terminus	597,25
7468	West Chicago avenue	Ashland avenue.	Leavitt street	8.158.20
7460	Prospect place	Vincennes avenue	Cottage Grove avenue	156.90
7470	Paulina street	West Twelfth street	West Fifteenth street	567.60
7488	West Fifteenth street	Canal street	Halsted street,	196.50
7507	Irving avenue	theresses	West Van Buren street	281.60
7508	Wilcox avenue	Flournoy street	Grenshaw street,	3,098,60
7510	Cleaver street		Bradley street	288.25
7511	Sigel street.	Sedgwick street,	Hurlbut street.	585.00
7612	Harfbut street	Clybourn avenue	North avenue	906.20
7524	Fox place,	Noble street	Elston avenue,	255.90
7580	North Wells street	Division street	North avenue.	282.00
7581	Hoyne avenue		Bryson street,	683 40
75.44	West Superior street	Ashland avenue	Wood street	1 519 40
7545	Thirtieth street	Prairie avenue.	Wentworth avenue	644.40
7546	. +++++++	Canal street.	Halsted street	159.00
1041	West Fourteenth street	Ashland avenue	Wood succession	1,100.00

70.80 130.80 221.60 206.15 854.00	201.60	158.00 158.00 500.00	523.70 391.20 633.30	6,252.40 2,069.00 1,253.65	1,214.60		295.80 406.05 1.570.00		914.55 4,171.20 335.20 252.90 \$151,931.45
Harrison street. Menomone street. May street West Lake street. Oakley avenue.	Campbell avenue	Western Jerminus Campbell avenue North avenue	Belden avenue. C., St. L. & P. R. R. Archer avenue.	Ogden avenue. North avenue. Halsted street	Huron street. Morgan street	North avenue. Rockwell street. West Twelfth street.	West Chicago avenue. North avenue	Halsted street. West Division street. C., St. L. & P. R. R.	Hanover street Homan avenue Twenty-ninth street.
West Congress street Wisconsin street. Morgan street. West Madison street. West Taylor street	Western avenue	Hogne avenue Western avenue West Division street	Webster avenue	Ashland avenue	West Chicago avenue	Sigel street Campbell avenue West Polk street.	West Kinzie street Schiller street.	North Clark street	Sanger street. California avenue. Twenty-sixth street. Ashland avenue.
Cicero court. Hammond street Eleventh street. Staunton street. Monroe street.	street	Frait place. Lexington street. Flournoy street. Dania ayenue.	Burling street. Artesian avenue. Twenty second place.	West Twelfth street. Seymour street. Blackhawk street		nue	Rumsey street. Wieland street. Butterfield street.	Fullerton avenue	Twenty-fourth place. Walnut street. Emerald avenue Cork street.
7971 7973 7974 7975	7797 7978	7980 7981 8174	8178 8179 8192	8193 8194 8195	8196 8197 8198	8201 8202 8208 8208	8275 8275 8276	8280 8280 8290	8312 8313 8314 8314

\$ 27,620 40 87,868 50 2,288 07 884 80 955 70 18,065 58 \$87,597 55 AMOUNT. STATEMENT OF ASSESSMENTS FOR STREET AND ALLEY OPENINGS AND WIDENINGS. O Winchester avenue Cottage Grove avenue Lake avenue Twenty-sixth to Twenty-ninth st. bet. Calumet and S. Park aves O Alley South of Thirty-seventh ct.) Michigan avenue Indiana avenue Cottage Grove avenue S. E. fr'l & Sec. 21, 39, 14 Total 5 FROM NAME OF STREET. Impt. No. of Warrant

STATEMENT OF ASSESSMENTS FOR LAYING PLANK SIDEWALKS.

Street,	NAME OF STREET.	FROM	TO	AMOUNT.
8	Vermont avenue	Thirty first street	Thirty-second street	\$ 801.2
na	West Van Buren street	California avenue	Kedzie avenue	1,396.9
B	Washtenaw avenue	West Fifteenth street	C., B. & Q. R. R	298.6
B	West Chicago avenue	Ashland avenue	California avenue	2,144.7
B	Fairfield avenue	West Lake street	N. Line Cossitt's 2d Addition	283.3
B	Walnut street	Kedzie avenue	Homan avenue	o en
B	West Twentieth street	Halsted street	Centre avenue	1,434.20
Z	West Taylor street	California avenue	Francisco avenue	0.45.0
B	Carroll avenue	Francisco street,	Albany avenue	0.000.0
B	Halsted street	South Branch Chicago River	Egan avenue	6,534.1
B	Butterfield street	Twenty-seventh street	I wenty-ninth street	200.7
B	Wentworth avenue	Thirty-third street	Egan avenue	1,330.3
W	Lincoln street	Thirty-first street	Thirty-second street	180.8
s	West Twenty-second street	California avenue	Southwest boulevard	116.9
B	Kedzie avenue	West Madison street	West Twelfth street	1,340.1
W	Rockwell street	West Sixteenth street	West Eighteenth street	0 20
B	West Indiana street	Ashland avenue	Western avenue	478.6
B	West Indiana street	Desplaines street	Elizabeth street	1,951.7
W	Ogden avenue	West Madison street	Warren avenue	117.2
B	Twenty-fourth place	Wentworth avenue,	Archer avenue	278.5
W	Lake Park avenue	Thirty-first street	Thirty-third street	88.55
W	Ouarry street	Archer avenue	C. & A. R. R	141.4
co	Fullerton avenue	Southport avenue	North Park avenue	2002.7
S	Florimond street	North Wells street	North Franklin street	135.4
B	Twenty-third street	Wentworth avenue	Hanover street	484.0
M	Twenty-fourth street	Wentworth avenue	Butler street	309.6
W	Thirty-first street	State street	Halsted street	404.5
W	Twenty-fifth place	Stewart avenue	Halsted street	333.63
W	Thirty-second street	Laurel street,	Benson street	270.6
>	I aguith closes	Weet Chicago avanua	West Division street	0.000

STATEMENT OF ASSESSMENTS FOR LAYING PLANK SIDEWALKS.-CONTINUED.

AMOUNT.	\$ 1,491.84 557.91 162.40 208.28 235.45	1,528 20 1,528 20 1,131.52 843.53 587.73	244.58 1,330.88 2,816.70 510.90	2,840.00 1,695.76 3,764.89 845.73 881.83 881.83	249.17 249.24 249.24 249.24 25.25 26.17 26.17 26.17 26.17
то	West Division street. Archer avenue Cottage Grove avenue Ullman street. Stewart avenue	Western avenue Western avenue Washtenaw avenue West Chicago avenue	Wenworth avenue. Benson street Twenty second street. California avenue	Californa avenue. West Twelfth street West Chicago avenue. Kedzie avenue Western Terminus North avenue Nostern Terminus Rockwell street	Rockwell street West Chicago avenue Lake Shore drive. Crawford avenue Avers avenue West Harrison street.
FROM	West Chicago avenue. Thirty-first street. South Park avenue. Halsted street.	Robey street Robey street Skobey street Seymour street Grand avenue	State street Laurel street Polk street Falls street	Green street. West Madison street. West Lake street. Halsted street street North Market street West Division street. Wester place.	Western avenue. Clark street. Egan avenue. Bonney avenue Hamlin avenue. West Congress street.
NAME OF STREET.	Oakley avenue Wood street. Thirty-second street. Thirty-fourth court	I homas street. Augusta street. Lowa street. West Superior street Rockwell street	I wenty sixth street James avenue. Wabash avenue State street Park avenue	West Adams street. Sacramento avenue. Wood street. West Jackson street. Whiting street. Humbold avenue. Wahut street	West Superior street Rockwell street Walton place Mest Twenty fourth street Fulton street Union place.
Side of Street.	****	****	≥ ≥ ≥ E n n n	NNSERBER	ш≽шшшшшш
No. of Warrant	7641 7642 7645 7646	7648 7649 7650 7672	77752 7884 7885 7885	7886 7888 7889 7891 7893 7893 7893	7895 7896 8010 8011 8013 8014 8014

B Western avenue West Chicago avenue North avenue B Gownsco street Wash chaw avenue California avenue B Grand avenue West Division street B Grand avenue Cantral Park avenue Robey street B Grand avenue Robey street Canvert Harrison street B Congress street West Twelfth street Robey street B Albay avenue Colorad Harrison street West Twelfth street Copress street Robey street West Harrison street California avenue West Harrison street California avenue West Harrison street Momal avenue Robes vireet Mostern avenue West Madison street Mushan avenue West Madison street Mushand avenue West Van Buren street Mushand avenue West Wash Van Buren B Lann court West Madison street Mushan avenue California avenue B Lann court West Tarrison street B Lann court West Tarrison street B Lann court West Tarrison B Lann court West Tarriso	876.71 822.54 947.96	617.76	411.90	1,481.03	874.32	288.09	325.36	95 99	121.10	107.00	344.96	248.44	189.75	1,569.66	220.40	200.02	172.81	990.00	407.04	280.00	1 000.40	396 90	365 70	1.114 39	53.15	808.28	756.00	697.10	130.13	96.009	4,257,73
West Chicago avenue Washtenaw avenue West Madison street West Chicago avenue Central Park avenue Wood street Halsted street Wood street Colorado avenue Kendall street California avenue California avenue California avenue West Madison street Wylate street Wylate street Westen avenue Ogden avenue Westen avenue Westen avenue Westen avenue Westen avenue Westen avenue Codden avenue West Indiana street West Huron street Canal street West Huron street Wenyalt street Canal street Leavitt street Canal street Wenworth avenue	North avenue	West Division street	Sobey street	Leavitt street	West Twelfth street	West Harrison street	West Twelfth street	Charles street	Wabash avenue	Kedzie avenue	West Harrison street	Leavitt street	West Van Buren street	Western avenue	Western Terminus.	West Nineteenth street	C, B. & Q. R. R.	., B. & Q. K. K.	., B. & Q. K. K.	Homan avenue	St. Louis avenue	West Chicago avenue	West Chicago avenue	West Twelfth street	Colorado avenue	Central Park avenue.	Slue Island avenue	Grand boulevard	Olive street	stewart avenue	analport avenue
B Western avenue B Gowasco street B Kedzie avenue B Grand avenue B Grand avenue B Grand avenue C Grand avenue C Cypress street B Ashland street C Ashland street B Thirty-eighth street B Havard street B Havard street B Havard street B Havard street C Ausin avenue C Lawnin avenue B Tawnin avenue C Lawnin avenue C Lawnin avenue C Lawndale avenue B West Twenty-first street B Hamlin avenue C Colorado avenue C Central Park avenue B Trumbull avenue B Trumbull avenue C Colorado avenue C Central Park avenue C Colorado avenue B Wasteret C Central Park avenue C Colorado avenue B Wasteret C Central Park avenue C Colorado avenue B Wasteret C Central Park avenue C Colorado avenue B Rewing street C Colorado avenue C Colorado avenue B Roes street.		West Chicago avenue	Central Park avenue	Halsted street	West Harrison street	Colorado avenue	Kendall street	Kobey street			West Madison street	Hoyne avenue	W. Jackson street	Ashland avenue	Western avenue								West fluron street	West Huron succi	W. Madison street					e	Commence on
	B Western avenue	B Kedzie avenue	B Grand avenue	B West Congress street	B Francisco street	B Albany avenue	B Cypress street	B Ashland street	R Thirty sighth street	B Harvard street	B Homan avenue	B Lexington street	***************************************		**** ******* ****		***************************************		**************	B West Nineteenth street	B West Iwenty-hrst street	B Tinkham avenue	b Lawndale avenue	D Washing avenue	R Central Park avenue	R Colorado avenue		h street	B Roe street	B Alexander street	B West Twenty-second street

STATEMENT OF ASSESSMENTS FOR LAYING PLANK SIDEWALKS.-CONTINUED.

. Wentworth avenue Robey street
Robey street Robey street Seymour street Grand avenue State street Laurel street Twelfth street Falls street Green street Green street Green street West Lake street North Market street North Market street West Division street
Western avenue Western avenue Grand avenue Slark street Sonney avenue Bonney avenue West Congress street

876.71 322.54 247.96	1,427.81	411.90	1,481.03	288.09	325.36	25.32	121.10	344.96	243.44	189.75	1,569.66	209.83	172.81	590.00	407.04	606 40	1.075.20	326.90	365.79	1,114.39	808 98	756.00	697.10	130,13	4,257.73
North avenue	West Division street	Robey street	West Twelfth street	West Harrison street	West Twelfth street	Francisco street	Wabash avenue	West Harrison street	Leavitt street	West Van Buren street	Western avenue	West Nineteenth street.	C., B. & Q. R. R	C., B. & Q. R. R	C., B. & Q. R. R.	Homan avenue	West Chicago avenue	West Chicago avenue	West Chicago avenue	West Twelfth street	Central Park avenue	Blue Island avenue	Grand boulevard	Olive street	Stewart avenue
West Chicago avenue	West Chicago avenue	Wood street.	Halsted street	1e	Kendall street		State street	et		et		Western avenue	***************************************	************************			West Indiana street				W. Madison street				Wentworth avenue
Western avenue Owasco street	Kedzie avenue	Bloomingdale road.	West Congress street				st	Homan avenue				Sawyer avenue					Tinkham avenue	Lawndale avenue	Hamlin avenue		ne	nuc	Thirty-seventh street		Alexander street
200	20 21	200	BB	B	8 8	Z	99	9 22	B	B	200	D (H	M	B	B	20	90	m	B	B	N	9 2	a m	B	BB
8016 8017 8018	8010	8021	8022	8054	8025	8027	8058	8020	8031	8032	8033	8084	8086	8087	8038	8039	8040	8042	8043	8044	8045	0000	8048	8049	8051

STATEMENT OF ASSESSMENTS FOR LAVING PLANK SIDEWALKS.—CONTINUED.

AMOUNT.	205.0 100.0 100.0 200.0 100.0	
TO	Belden avenue Twenty-seventh street Thirty first street West Van Buren street Sacramento avenue Sacramento avenue Southwestern boulevard Wood street West Twelfth street Crawford avenue Ems street Wood street West Adams street West Jackson street Halsted street West Halth street Halsted street West Halth street Halsted street West Harrison street	
FROM	Webster avenue Archer avenue Archer avenue Archer avenue Colorado avenue California avenue California avenue California avenue California avenue West Kinzie street Humboldt Park boulevard Ashland avenue Ashland avenue Ashland avenue Hamburg street West Harrison street West Adams street West Adams street West Adams street West Adams street Canal street Canal street West Adams street West Adams street West Adams street West Adams street Canal street Canal street West Madison street	
NAME OF STREET.	Bissell street. Lincoln street. Ouarry street. Oquarry street. Troy street. West Twenty-fifth street West Twenty-fifth court West Twenty-fifth court West Twenty-fifth court West Twenty-fifth court West Twenty-fifth street. Keenon street. Exercise street. Breslau street. Albany avenue Washington street. Leipsic street. Brigham street. Leipsic street. Living avenue Irving avenue Irving avenue Kedrie avenue Kedrie avenue Kedrie avenue Kedrie avenue Kedrie avenue Kedrie street. Damon street. Damon street. Damon street. De Koven street Leiferson street Leiferson street Leiferson street Helsted street Mest Harrison street West Harrison street Glinton street Glinton street West Harrison street Glinton street West Harrison street	
Side of Street.	名 と と と と と と と と と と と と と と と と と と と	
No. of Warrant	8053 8054 8055 8055 8055 8055 8055 8060 8061 8063 8063 8063 8063 8064 8065 8065 8067 8072 8073 8073 8073 8073 8073 8073 8073 8074 8075 8088 8088 8088 8088 8088 8088 8088	

***************************************				1000				
Ogden avenue. Wood street. West Fourteenth street. Wood street.	Twenty second street West Chicago avenue West Twelfth street	West Twelfth street. Central Park avenue. Western avenue	Washtenaw avenue	West Chicago avenue West Lake street Crawford avenue	West Twenty sixth street. West Twelfth street Western avenue	Elizabeth street Ashland avenue Cortland street.	West Sixteenth street. Halsted street. West Harrison street.	Ogden avenue. Milwaukee avenue. Swest Chicago avenue Illinois street West Twelfth street,
Ashland avenue	Van Buren street.	Ogden avenue. Colorado avenue. Halsted street	West Madison street. Loomis street Canal street	West Ohio street	Ogden avenue Ogden avenue Elizabeth street	Canal street Sangamon street. Bloomingdale road.	West Lake street. Canal street. West Madison street.	West Madison street. West Madison street. Milwaukee avenue. Kinzie street. West Madison street.
West Twelfth street West Fourteenth street Waller street West Thirteenth street Miller street	Clark street Lincoln street Albany avenue	reet	ton street	ray street. Western avenue. Oodles avenue	ee t		reet	Robey street Peoria street. Sangamon street West Ohio street. Kingsbuy street. Morgan street.
MMMMM	9888	пппп	9889	BKB	mmm	MWH	папа	
8088 8089 8090 8091 8092	8094 8095 8095	8080 8080 8080	8101	8104	8107 8110 8111	8118 8118 8117 8117	8162 8163 8194	8180 8180 8181 8181

STATEMENT OF ASSESSMENTS FOR LAYING PLANK SIDEWALKS, -CONTINUED.

AMOUNT.	5 742.25	141.75	1,278.07	2,439.33	8,161,18	815.85	186.15	526.58	138.01	59.85	411.49	148.17	2,312,73	760.91	871 68	266.98	490.34	173.28	1,850.79	487.76	202.62	106.75	124.00			487.68			870.79	422,08	460.48
то	West Twelfth street	Gurley street	West Chicago avenue	Centre avenue	Seymour street	Jefferson street	West Sixteenth street	West Harrison street	Ashland avenue	North avenue	Webster avenue	West Van Buren street	Washtenaw avenue	Crawford avenue	Fulton street	Austin avenue	Oakley avenue	Halsted street	Division street	Division street	Pratt place	Perry avenue	West Twenty-fifth court	North avenue	Rockwell street	Blue Island avenue	Pine street	Townsend street.	Homan avenue	Fullerton avenue	Point street
FROM	West Harrison street	West Harrison street	Madison street	Halsted street	Noble street	Canal street	West Twelfth street	West Madison street	Blue Island avenue	Clybourn avenue	Dayton street,	West Madison street	Halsted street	Central Park avenue	West Madison street	West Madison street. R	Noble street	Canal street	Michigan street	Chicago avenue	West Monroe street	Powell avenue	West Twenty-fifth street	West Division street	Robey street	Stewart avenue,	Hawthorne avenue	North Franklin street.	Kedzie avenue	Milwaukee avenue	Milwaukee avenue
NAME OF STREET.	Jefferson street.	Silver street	Paulina street	West Polk street		Milwaukee avenue	Paulina street	***************************************	Thirteenth place	Orchard street	Bissell street	Seeley avenue	West Taylor street	West Ohio street	Kedzie avenue	Ada street	West Superior street	West Sixteenth street	North Market street	Larrabee street	Hamilton avenue	Cherry street	Francisco street	Davis street	t		Oak street	Locust street	West Congress street	Cromwell street	Cornelia streetll
Side of Street.	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	8	B	B	B	B	B	B
No. of Warrant	8183	8184	8185	8186	8187	8188	8217	8218	8219	8320	8221	8222	8233	8234	8235	8236	8237	8238	8239	8240	8241	8242	8343	8244	8245	8297	8208	8299	8300	8301	8803

œ	Church street	Western avenue	Seymour street	
2	Henry street	:	Blue Island avenue	
2		West Twelfth street.	South Branch of Chicago River.	1.187.58
2		:	West Eighteenth street	_
æ			Buchanan street.	
2		Stewart avenue.	. Halsted street	1.114.8
A			Garfield avenue	718 43
~			California avenue	692.8
æ			Ashland avenue	991.8
x			Garfield avenue	708.1
	Total	17.0tal		181 008 9

STATEMENT OF ASSESSMENTS FOR THE ERECTING OF GAS LAMP POSTS.

270.00 957.00	1,334.00	151.25	363.00	211.75	65.50	1,287.00	85 50	151.25	181.50	121.00	211.75	789.75	672.75	789.75	95,75	181.50	211.75	211.75		151.25	2,779.50	1,413.50	756.35	243.00	3,499.28	243.00	151.25	965.25	333.75	832.75	00.00
Noble street.	Egan avenue.	ake Park avenue	fullerton avenue	Selden avenue	Bissell street,	Ioman avenue	Warket Street	Ohio street	llinois street	North State street,	South La Salle street	falsted street	Douglas avenue	Thirty-first street	Vabash avenue	North terminus	ndiana avenue	Egan avenue	Auburn street,	Maxwell street,	Ogden avenue	California avenue	Quarry street	Archer avenue	Egan avenue,	Franklin street	West Chicago avenue	Armitage avenue	West Indiana street	Halsted street	oupin place,
West Polk street.	eet,	Cottage Grove avenue	Garfield avenue	Webster avenue	Sheffield avenue	California avenue	Anchin avenue	,		Dearborn avenue	State street	Wentworth avenue	t	street					t	street	e		Deering street	**********	treet		ne	North avenue	West Madison street		macanister place
Fox place. Nixon street.	South La Salle street	Thirty-second court	Sheffield avenue	Bissell street	Belden avenue.	West Madison street	North Centre avenue	St. Clair street.	Kingsbury street	Oak street	Twenty-fifth street	Egan avenue	Auburn street	Dashiel street	Thirty-eighth street	Aldine street	Thirty-seventh street	Prairie avenue	Douglas avenue	Clinton street,	t	street	*************		Indiana avenue	Washington street	Morgan street	Robey street	Peoria street	Kramer street	Thing street,
9000	48	0 10	12	7	03;	44	200	210	9	+ 4	7	27	53	22	20	9	-	7	42	0	105	200	2	0	124	00	0	889	=	110	
7691 7698 7735	7744	7844	7848	7819	7850	7851	7858	7854	7855	7856	7857	7858	7859	7860	7861	7862	7863	7864	7865	9987	7867	7868	1871	7872	1874	7932	7923	7934	7925	7926	2000

STATEMENT OF ASSESSMENTS FOR THE ERECTING OF GAS LAMP POSTS.

Assessment.	4 484 151 151 151 151 151 151 151 151 151 15
TO	Halsted street. Henry street. Campbell avenue. Ogden avenue. Monce street. Lake Park avenue. Twelfth street. West Division street. Ashland avenue. California avenue. California avenue. California street. Wight street. Wright street. Sedgwick street. Womore street. West Chicago avenue. West Chicago avenue. West Chicago avenue. West Chicago avenue. Wood street. Wood street. Wood street. West Chicago avenue. Thompson street. Claremont avenue. Blue Island avenue. Hanover street.
FROM	Canal street. Thirteenth place. Ogden avenue. Paulina street. Madison street. Groveland avenue. Groveland avenue. Harrison street. West Chicago avenue. Falls street. Adams street. Hobbie street. North Wells street. Mest Fourteenth street. North Wells street. Milwauke avenue. Milwauke avenue. Ashland avenue. Ashland avenue. Coulter street. Dakky avenue. Coulter street. Twenty fourth street.
NAME OF STREET.	Barber street. West Taylor street. West Taylor street. Franklin street. Wast Twenty inith street. Wabash avenue. Fifth a
No, of Posts.	\$1055444058080000000000000000000000000000
No. of Warrant	793.0 793.0 793.0 793.0 793.0 793.0 794.0 794.0 794.0 794.0 796.0

181 961 151 151 151 151 151 151 151 1	\$48,900.53
Prairie avenue. Butterfield street. Westmornhavenue. Bastern terminus. Mest Harrison. Noble street. Coulter street. Twenty sixth street. Sahland avenue. North Market street. North Market street. West Fourteenth street. West Fourteenth street. West Fourteenth street. West Polk street. West Polk street. Vest Polk street. Colorado avenue. Rockwell street. Colorado avenue. West Van Buren street.	
Michigan avenue. South Dearborn street. Sale street. Noble street. West Jackson street. North Centre avenue. West Jackson street. Inwenty second street. Milwaukee avenue. Laughton street. Milwaukee avenue. Leugenie street. North Franklin street. North Franklin street. Jefferson street. Canal street. Ogden avenue. Canapbell avenue. Canapbell avenue. Canapbell avenue. West Madison street. West Jackson street.	
Thirt-yaccond street. Thirty-fourth street. Bismarck court. Bismarck court. Been street. Green street. Green street. Green street. Western avenue. Fordland avenue. Fordland street. Looms street. Looms street. Looms street. West Seventeenth street. West Monroe street. Washenaw avenue. Washtenaw avenue.	Total,
∞ ∞∞≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈	
8005 8007 8007 8007 8138 8138 8145 8155 8155 8155 8155 8155 8156 8156 815	

STATEMENT OF ASSESSMENTS FOR ERECTING OIL LAMP POSTS.

nue	entral Park avenue	1	To West Ohio street
4 Purple street. Nineteenth street. 11 Keeley street Tyman street. 12 Farrell street Tyman street.	ineteenth street	,	Twentieth street
Ashland avenue	10 ft. S. West Twenty-second		
Quinn street.	rcher avenue		Thirty-first street
Goloma street	rcher avenue		Thirty-first street
8 Thirtieth street	entworth avenue		Chan't street
Zion place	hroop street		Loomis street
Thirty-third court	shland avenue		Paulina street
	ouglas avenue		Egan avenue
Seymour street	est Kinzie street	-	West Chicago avenue
18 West Erie street	eavilt	92 5	Seymour street.
	outh Terminus	-	Northern Terminus
Throop street	est Twenty-second street	102	South Branch Chicago River
Park avenue	amlin avenue	~	Crawford avenue
West Washington street,	amlin avenue	٠.	Crawford avenue
Warren avenue	amlin avenue	-	Crawford avenue
Ward court,	efferson street		Lumber street
Hamlin avenue	est Lake street	-	West Chicago avenue
Kockwell street	est Lake street		Fulton street
Walsh court	ay street	~	Center avenue
	ulton street,	~	Central Park Boulevard
*********	est Lake street	4	West Kinzie street.
	sk street	~	Center avenue
	est Huron street	=	and the same of th

Laugnion street. Western avenue. Validany avenue. West Superior street. Thirty-first street. Wood street. Wood street. Wood street. Wood street. Thirty-first street. Wood street. West Sixteenth street. Derring street. Caraford avenue. Caraford avenue. Caraford avenue. Lock street. Lock street. Lock street. Lock street. Douglas avenue. Total.	Western avenue Mostern avenue Western avenue Wood street. Thirty-first street West Fifteenth street Ashland avenue Thirty-first street Central Park avenue Laurel street West Sixteenth street West Sixteenth street West Sixteenth street Blue Island avenue West Twelfth street Central Park Dering street Central Park West Savenue West Twelfth street James avenue
Western avence Western avence Western avence Wood street Wood street West Fifteenth street West Fifteenth street Thirty-first street Central Park avence Laurel street West Sixteenth street West Sixteenth street West Sixteenth street West Twelfth street Furple street Central Park Boulevard Deering street Deering street	Colorado avenue. West Superior street. Western avenue. West Superior street. Western avenue. West Bulle lace. Bulle fluon street. Washtenaw avenue. Mosprat street. West Fifteenth street. West Fifteenth street. West Chicago avenue. Thirty-first street. West Sixteenth street. Blue Island avenue. Lincoln street. West Twelfth street. West Chicago avenue. Central Park Boulevard Lyman street. Deering street. James avenue. Total
	Laughton street. Colorado avenue. West Superior street. West Huron street. Lull place. Butler street. Washtenaw avenue. Henry street. Mosprat street. West Ohio street. James avenue. Morgan street. West Sixteenth street. Lincoln street. Egin street. Egin street. West Sixteenth street. Lincoln street. Lyman street. Lyman street. Ullman street.
	2444000220002221023

Amount of Assessment. \$ 831.52 87,301.54 13,547.84 4,034.52 7,648.86 5,789.43 4,494.36 4,044.10 Douglas avenue

Egan avenue

Twenty-second street Indiana avenue

Indiana avenue

Eighteenth street

Twenty-second street

Twenty-second street

Twenty-second street

State street

State street

St. Clair street

Douglas avenue

Twenty-second street

Indiana avenue

Eastern Termin--
St. Clair street STATEMENT OF ASSESSMENTS FOR LAVING STONE SIDEWALKS. 10 North Clark street... FROM Schiller street..... Total NAME OF STREET. Side of Street. MMMMZMMM No. of Warrant. 7503 77738 7780 780 880 880 88173 8173

SUMMARY.

Total Assessments for Wood Block Pavement, including Curbing and Filling: North Division. \$ South Division. 1	248,572.03 424,871.26 ,149,105.05	\$1,822,548.34
Total Assessments for Miscellaneous Street and		
Alley Improvements: North Division South Division West Division	35,130.24 189,744.37 453,844.33	678,218.94
Total Assessments for Laying Private Drains:		
North Division	4,920.50 14,938.25 86,784.00	106,642.75
Total Assessments for Laying Water Service Pipes: North Division. South Division. West Division.	7,453.55 23,799.50 120,678.40	151,931.45
Total Assessments for Street and Alley Openings and Widenings:		
North Division	40,985.87 46,661.68	87,597.55
Total Assessments for Laying Plank Sidewalks: North Division South Division. West Division.	7,029.09 27,887.00 146,180.11	181.096.20
Total Assessments for Erecting Gas Lamp Posts: North Division South Division West Division	3,095.25 14,532.28 31,278.00	22200000
Total Assessments for Erecting Oil Lamp Posts: North Division. South Division. West Division.	87.60 2,539.25 4,390.50	48,900.53
		7,017.35

	valks:	Total Assessments for Laying Sto
	\$ 9,359.88	North Division
		South Division
\$76,521.5	***************************************	West Division,
43 160 474 6		Grand Total
\$0,100,111,0		Grand Total
HE CITY.	Y DIVISIONS OF T	SUMMARY OF ASSESSME
	TISION.	W
	\$1,149,105.05	Wooden Block Pavement
		Miscellaneous Street and Alley In
		Laying Private Drains
		Laying Water Service Pipes
		Street and Alley Openings and V
		Constructing Plank Sidewalks
		Erecting Gas Lamp Posts
		Erecting Oil Lamp Posts
** *** **		Stone Sidewalks
\$2,038,417.0		
	VISION.	della company de la company de
		Wooden Block Pavement
		Miscellaneous Street and Alley I
		Laying Private Drains
		Laying Water Service Pipes
	s 40,935.87	Street and Alley Openings and W
		Constructing Plank Sidewalks
		Erecting Gas Lamp Posts
	2,589.25	Erecting Oil Lamp Posts
000 100 1	67,161.68	Stone Sidewalks
806,409.4		
	VISION.	No
	\$248,572.03	Wooden Block Pavement
	ents 35,130.24	Miscellaneous Street and Alley In
	4,920.50	Laying Private Drains
	7,453.55	Laying Water Service Pipes
	8	Street and Alley Openings and V
	.,, 7,029.09	Constructing Plank Sidewalk
	3,095.25	Erecting Gas Lamp Posts
	87.60	Erecting Oil Lamp Posts,
	9,359.88	Stone Sidewalks
315,648.1		

The following list shows the total of assessments made in each year since 1861:

For the year ending April 1, 1862	\$ 42,635.49
For the year ending April 1, 1863	46,493.67
For the year ending April 1, 1864	389,169.31
For the year ending April 1, 1865	103,576.35
For the year ending April 1, 1866	802,574 56
For the year ending April 1, 1867	317,206.18
For the year ending April 1, 1868	1,354,436.48
For the year ending April 1, 1869	2,395,683.03
For the year ending April 1, 1870	9,836,852.48
For the year ending April 1, 1871	2,359,835.89
For the year ending April 1, 1872	62,222.25
For the year ending April 1, 1873	
For the year ending April 1, 1874	749,460.27
For the year ending April 1, 1875	728,254.42
For the nine months ending January 1, 1876	60,585.72
For the year ending January 1, 1877	1,516.081.07
For the year ending January 1, 1878	124,498.48
For the year ending January 1, 1879	284,900.45
For the year ending January 1, 1880.	588,963.44
For the year ending January 1, 1881	980,895.50
For the year ending January 1, 1852	1,227,169.71
For the year ending January 1, 1883	1,395,372.98
For the year ending January 1, 1884	2,232,757.04
For the year ending January 1, 1885	2,857,905.28
For the year ending January 1, 1886	2,889,544.80
For the year ending January 1, 1887	3,307,567.99
For the year ending January 1, 1888	3,160,474.67
Total for twenty-seven years	\$32,830,117.51

Respectfully submitted,

H. J. JONES,

Superintendent Special Assessments.



BOOK-KEEPER'S STATEMENT

FOR 1887.

CHICAGO, December 31st, 1887.

Hon. GEO. B. SWIFT,

Commissioner of Public Works.

DEAR SIR: I herewith respectfully submit statement in detail of the receipts and expenditures of your department for the year 1887.

WATER FUND.

RECEIPTS.

Acc't Current Rents.

Amount collected during the year for current water rents assessed.

rents, assessed.... \$990,766 73

Amount collected during the year for current water rents, meter measurements.....

499,233 95 -----\$1,490,000 68

Carried forward,

\$1,490,000 68

Brought forward,		:	\$1,490,000	68
Acc't Water Service (Cocks.			
Amount received for tapping permits	\$35,842	95		
plumbers' licenses	254	00		
Amount received for				
old horses sold	145 	00 —	36,241	95
Acc't Meter Departme	ent.			
Amount received for labor and material for laying and repairing water supply pipes for elevator and general supply, also for changing location of hydrants, stopcocks, etc	34,013 11,613 3,709	80	49,337	08
Acc't Water Pipe Ex	tension.			
Amount received for labor	113 3,950			
special eastings			4,063	64
Carried forward,		\$	51,579,643	

Brought forward,	\$1,579.6 4 3 35
Miscellaneous Receipt	• •
Amount advanced by private parties to lay water	
mains	\$34,752 00
wrenches Amount deposited by J. W. Lyons,	550 00
cashier	686 61
vestment in city	5,918 40
Amount received for rent of "rookery" lot	20,416 68
Amount received from Comptroller for water tax re-	
demptions Amount of vouch-	23 00
ers canceled Amount received for labor and material on account of wa-	858 65
ter works shop Amount received for labor and material on account	90 84
of new shore in-	228 73
Carried forward,	\$63,524 91 \$1,579,643 35

Brought forward, Amount received for labor and material on account of wa-	\$63,524	91	\$1,579,643	35
ter works stable	131	3 0		
Amount received for				
labor and material on account of wa-				
ter works repairs	182	26		
Amount received for				
labor and material				
on account of wa-				
ter and drainage				
commission	55	00		
Amount received				
for labor and ma-				
terial on account				
of north pumping				
works	3	3 3		
			63,896 8	0
Total receipts,		-		-\$1,643,540 15
			•	

EXPENDITURES.

Acc't Water Pipe Extension.

Paid for—

Labor	\$122,989 17
Iron water pipe and	
castings	138,721 72
Lead	13,597 83
Bricks	7,053 90
Sewer pipe	137 20
Cement and lime	3,347 00
Sand	286 50
Lumber	4,488 88
Explosives	1,164 97

Carried forward, \$291,787 17

D	#001 #0#	17	
Brought forward,			
Blasting rock	5,46 9		
Plumbing	1,082		
Paint and oil		48	
Paving	164		
Teaming, etc	10,122		
Hardware	807		
Advertising		15	
Gasket and packing,	582		
Hay		80	
Composition pipe	417	75	
Hydrant and stop-			
cock chambers	5,106	75	
Hydrants, valves,			
etc. (made at wa-			
ter works shop)	21,872	15	
Moving gas — and			
other pipes	1,317	5 0	
Coal	45	00	
Sewerage work	2,336	35	
Horses	425	00	
Harness and blank-			
ets	50	00	
Rubber goods	16	00	
Lamps, globes, etc.	15	00	
Blacksmithing	80	85	
Scrap iron	139	44	
Books, printing and			
stationery	99	45	
Tools and repairing,	222		
Scale and repairing,	77		
Engineer supplies		77	
Stable expenses	1,081		
			\$343,550 12
			
Carried forward,			\$343,550 12

Brought forward,			\$343,550 12
Acc't Water Works R	epairs.		
Paid for—			
Labor	\$86,901	65	
Teaming	6,630	67	
Hardware	314	01	
Water pipe and			
castings	2,637	50	
Plumbing	1,171	4 1	
Lead.	670	50	
Sand	37	50	
Horse shoeing and			
stabling	36 8	- •	
Bricks	1,395		
Cement	700	00	
Lumber	1,641	27	
Lamps, oil, etc	42	18	
Coal	10	00	
Stone cutting	68	00	
Machine work at			
water works shop,	1,962	55	
Tug service	62	00	
Paving	1,365	3 3	
Damages	25 0	00	
Advertising	15	30	
Books, printing and			
stationery		36	
Iron work	64	90	
Lime	2	2 0	
Sewerage work	572	22	
Tools	20	06	
Repairing sidewalk.	6	00	
Sewer pipe	103	52	
Car fare	144	95	
Postage	. 16	25	
-			107,195 30
Carried forward,		-	\$450,745 42

Brought forward,			\$450,745	42
Acc't North Pumping	Works.			
Paid for—				
Coal	\$84,829	34		
Salaries of engin-	. ,			
eers, firemen, oil-				
ers, etc	43,5 51	65		
Gas	1,175			
Teaming	909	06		
Steam fitting	117			
Oil, grease and				
paint	1,113	96		
Repairing machin-				
ery	1,165	5 8		
Gauges and ther-				
mometers	144	50		
Sewerage work	97	2 0		
Belting	1	64		
Flue cleaner	16	00		
Tools and repairing,	85	33		
Brass fittings	29	43		
Earth filling	125	20		
Tallow	19	03		
Wire work	20	00		
Soap, brooms, pails,				
etc	60	5 8		
Cement and lime	20	05		
Sheet copper	4	38		
Waste and packing,	482	85		
Fire brick and clay.	126	37		
Valves and fittings.	36	80		•
Lumber	413	73		
Stabling horses	360	47		
Test weights	6	00		
Carried forward,	\$134,911	00	\$450,745	42

Brought forward,	\$134.911	οσ	\$450.745	42
Castings and iron	Ψ101,011	••	Ψ200,120	
work	90	36		
Use of telephone	100	00		
Bricks	17	00		
Polish	15	00		
Lamps and globes.	1	87		
Hardware	61	4 3		
Scales	90	00		
Plumbing	14 0	24		
Window shades	6	95	•	
Stove and pipe	5	45		
Glass	31	54		
Lawn mower	8	55		•
Water coolers	13	00		
Ice	60	00		
One clock	9	00		
Windows and doors,	16	85		
Rubber boots	4	28		
Engineer supplies	39	4 0		
Books, printing and				
stationery	28	15		
One tank	8	00		
Advertising	6 8	18		
Grass seed		63		
-			135,726	88
Acc't North Pumping	r Works	Frt	en si on	
•	, ,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	3,000		
Paid for—	14.040			
Labor.:	14,940			
Machinery	8,406			
Iron roof.	5,357			
Fire brick and clay.	24 0			
Teaming	322	UU		
Steam—and gas fit-	0.60	o=		
ting	263	27		
Carried forward,	\$29,52 9	91	\$586,472	30

Brought forward,			\$586,472	3 0
Cement	321			
Stone and granite	1,298		•	
Lightning rods	125	00		
Iron work	314	90		
Galvanized iron				
work	202	55		
Diving	150	00		
Hardware	108	87		
Lumber	514	07		
Gas fixtures	124	5 0		
Paint and oil	28	27		
Stairs and railings	418	00		
Mouldings and				
flooring	125	41		
Patterns	300	00		
Iron Pipe	432	24		
Mud drums	483	26		
Tile floor	1,050	00		
Circle bends	648	37		
Testing engines	1,282	15		
Engineer supplies.	59	83		
Glass and glazing.	52	17		
Coke	63	7 5		
Advertising	8	32		
Repairing tools	146	42		
-			37,788	17
Acc't West Pumping	Works			
	FF UFKS.			
Paid for—				
Salaries of engin-				
eers, firemen, oil-	05 44 2	. ·		
ers, etc	37,116			
Coal	45,104	58		
Oil, grease and				
paint	2,372	85		
Carried forward,	\$84,594	28	\$624,260	47

Brought forward,	\$84,594	28	\$624,260	47
Waste and packing.	585		•	
Machine work	1,001	89		
Repairing boilers	•			
and engines	2,397	09		
Castings	65	42		
Fire brick and clay.	224	00		
Brass fittings	66	45		
Lumber	105	70		
Covering steam				
pipe		4 0		
Screenings	227			
Use of telephone	100	00		
Copper pipe and				
work	537			
Valves	492			
Hardware	53	67		
Brooms, brushes	~ 1	4 =		
and soap		45		
Rubber goods		25		
Tools		65		
Tiling		60		
Belting and leather,		94		
Flue blower		00		
Wainscoting		50		
Ice		50		
Sand		00		
Advertising		01		
Glass		01		
Door mats	_	25		
Grinding bricks		-00		
Rope · · · · · · · · · · · · ·	8	13		
Printing and sta-	0	25		
tionery	_	65		
Polish		25		
Engineer supplies	36 	56	90,995	79
_				
Carried forward,			\$715,256	19

Brought forward, \$715,256
Acc't Meter Department.
Paid for—
Labor
Meter and fittings 18,902 30 Teaming 194 28
8
Rebates
3
Rubber packing 64 25 Iron cover 7 75
Coal and tar 9 00
Lumber 546 36 Iron pipe and cast-
ings 9,006 49
Valves 255 12
Meter glasses 14 00
Lead 1,042 11
Bricks
Printing and sta-
tionery 17 00
Cement
Machine work at
shop 2,855 24
Sewer-pipe 10 20
Hardware 54 57
Pails 9 00
Tools
Blacksmithing and
horseshoeing 174 85
Hoisting-crane 75 00
Sawdust
Wax and seals 12 50
Stabling and horse supplies 826 61
Freight 1 38
58,598 7
•

Brought forward. \$773,854 95

Acet Water Service	Cocks.			
Paid for—				
Inspection and				
labor	\$24,901	36		
Tapping-machines.	152			
Taps	6.780	14		
Plumbing	320	73		
Brass castings	26	65		
Four horses	650	00		
Stabling expenses.	1,264	64		
Advertising	11	68		
Books, printing and				
stationery	156	35		
-			34,293	58
Acc't Lake Tunnel Co	rib.			
Paid for—				
Labor (including				
keeper's salary)	2,445	99		
Tug service	2,802	33		
Meals	448	75		
Coal	219	25		
Steam engine	271	69		
Paint, oil, lamps, etc.	75	61		
Blankets and mat-				
trasses	31	6 0		
Lime and cement	8	70		
Engineer supplies.	78	87		
Hardware	3	66		
Repairing roofs	76	3 0		
Brooms	3	35		
Advertising	21	58		
_			6,487	68
Carried forward,			\$814,636	21

Brought forward,			\$814,636	21
Acc't New Shore Inlet.				
Paid for—				
Labor	\$1,622	81		
Electric light cable.	2,413			
Pier	12,832			
Lighthouse	1,372			
Galvanized-iron	,			
pipe	6	46		
Cement	51	00		
Lumber	42	88		
Freight and cartage	26	5 0		
Lamps	3	00		
Engineer supplies.	2	17		
-			18,373	02
Acc't Water and Drain	nage Con	nm	ission.	
Paid for—				
Salary of Commis-				
sioners, Engi-				
neers, Rodmen,				
Inspectors, and				
labor	20,374	99		
Statistics, telegrams				
and maps	193	05		
Expenses of sur-				
veying parties and				
traveling ex-				
penses of Com-				
missioners and	4 000			
Engineers	1,266	10		
Short-hand and		•	•	
type-writing	171			
Electrotyping	80	00		
Draughting mate-				
rial	35	72		
Carried forward,	\$22,121	46	\$833,009	23

Brought forward,	\$22,121	46	\$833,009	23
Printing and sta-				
tionery	112	99		
Tracings and en-				
gravings	3 01			
Express charges		95		
Tug service	44	00		
Iron work	5	00		
Lumber	2	00		
Bottles	1	13		
Hardware	1	6 0		
Tools	15	90		
Carbon oil	5	00		
Engineer supplies	84	17		
			22,701	45
Acc't Miscellaneous E	rhenses.			
Paid for—	apinous.			
Salaries in City En-				
gineer's office	6,811			
Labor	1,119	67		
Books, maps and				
stationery	285			
Hardware		65		
Livery		00		
Lumber		5 0		
Furniture	23	4 0		
Blue prints	64	03		
Type-writing	10	80		
Postage	41	2 0		
Car fare	134	77		
Express charges		3 0		
Use of steamboat	135	00		
Keeping horse	157	60		
One horse	200	00		
Horseshoeing	10	65		
One set buggy har-				
ness	53	50		
-			9,081	42
Carried forward,			\$864,792	10

BOOK-KEEPER'S STATEMENT. 383

Brought forward,			\$864,792	10
Acc't Water Office Exp	benses an	ed S	alaries.	
Paid for—				
Books, printing and				
stationery	\$1,502	12		
Advertising	158	93		
Office furniture	117	87		
Tape-lines and tools	145	81		
Candles	19	44		
Matches	37	20		
Car fare	2,402	26		
Postage	571	50		
Stairway to vault	92	00		
Steam-fitting	4	95		
Changing electric				
light	18	19		
Maps	3 9	00		
Wire railing	59	42		
Coin machine and				
scales	16	40		
One safe	60	00		
Hardware	32	03		
One city directory.	5	00		
Repairing clock	2	5 0		
Salaries, collecting				
rents assessed	41,308	06		
Salaries, collecting				
meter rents	17,557	97		
Salaries of Inspec-				
tors	32,538	65		
Salaries of Asses-				
sofs	13,584	75		
Salaries of shut-off				
men	12,316	96		
_		—	122,591	01
Carried forward,		•	\$987,383	11

Brought forward,			\$957,353	11
Acc't Water Proportio	nal Offic	e E	xpenses a	nd Salaries
Paid for—	_		_	
Books, printing and				
stationery	\$575	75		
Postage	122	77		
Car fare	115	29		÷
Repairing electric				
lights		50		
Candles	5	00		
Matches	4	00		
Newspapers	14	3 0		
Advertising	10	50		
One - third salaries				
of commissioner,				
secretary, book-				
keeper, and oth-	4,618	98		
——————————————————————————————————————	4,010		5,781	42
Acc't New Lake Tunn	el.		•,	
Paid for—				
Advertising	43	46		
Printing specifica-				
tions	17	00		
Blue prints	8	09		
Blacksmithing	274	87		
Lumber	74	94		
Tug service	170	00		
Use of steamboat	290	00		
Pulling and driving				
piles	1,740	00		
Engineer supplies	47	51		
Hardware	10	51		
Paint and oil	4	95		
Teaming	1	28		
Roofing shed	22	14		
Labor	2 ,013	91		
			4,718	66
Carried forward,			\$997,883	19

Brought forward,			\$997,883	19
Account New Land T	unnel.			
Paid for—				
Labor	\$531	25		
Belting	20	37		
Iron	58	83		
Teaming	2 8	05		
Oil	5	41		
Hardware	16	85		
Coal	28	5 0		
Sewer pipe	1	60		
-		—	690	86
Sundry Expenditures				
Paid for—	•			
Interest on water				
loan bonds	264,374	5 0		
Investment in city	040.000	^^		
bonds	343,280			
Real estate	57,220	31		
Money advanced re-	00.000	00		
funded	20,229	ZO		
Rebates for hydrant wrenches	43 0	00		
R. N. Pearson, cash-	100	00		
ier	500	00		
Water pipe and				•
castings on hand.	113,272	27		
Cement on hand	7	50		
Lead on hand	2,656	00		•
Sewer pipe on hand,	300	00		•
Bricks on hand	17	00		
Water works shop,				
maintenance of	2,022	1 2		
Water works stable,	131	30		
Water rents over-				
paid refunded	222			
Crib protection	65	79		
New west side	90	70		
pumping station.	3 0	79	804,760	13
Total Expenditu	rec			—\$1,803,334 <u></u>]18
Total Expenditu	103,			Ψ1,000,00 1 ,]10

SEWERAGE FUND.

RECEIPTS.

Amount received for drain permits. Amount received	\$3 5,861	4 0		
for drain layers' li- censes	361	00	\$36,222	40
Amount appropria- ted by City Coun- cil for cleaning sewers and catch-			* ,	
basins	43, 000	00		
ted by City Council for repairing sewers and catch-	٠			
basins	5,000	00		
Amount appropria- ted by City Coun- cil for raising catch-basins to				
grade	35,000	00		
Amount appropria- ted by City Coun- cil for sewerage	22,222			
sinking fund	50 0	00		
Amount appropria- ted by City Coun- cil for river im- provement sink-				
ing fund	50 0	00		
Amount appropria- ted by City Coun- cil for sewerage	200	00		
office salaries	16,920	00		
			\$0 0.000	
Carried forward,	\$100,920	00	\$36,222	4 0

•BOOK-KEEPER'S STATEMENT.

Brought forward,	\$100,920 00	\$36,2 22	4 0		
Amount appropria-					
ted by City Coun-					
cil for sewerage					
fund proportional					
salaries and office					
expenses	5,760 00				
Amount appropria-					
ted by City Coun-					
cil for new sewers,	186,000 00				
Amount appropria-					
ted by City Coun-					
cil for deficiency					
in collection of					
taxes	3,250 76				
Amount appropria-					
ted by City Coun-					
cil for refunding					
money advanced.	24,858 00				
		320,788	7 6		
Amount advanced					
by sundry persons					
for constructing	•		•		
sewers		5,957	00		
Amount received					
from special as-					
sessment fund					
and private par-					
ties for construct-					
ing catch - basins					
and other sewer-		10.000			
age work		12 ,9 02	60		
Amount received		0.00	0.0		
for material		260	UÜ	6970 19 0	on
Total Red	ceipts, -			\$376,13 0	82

Acc't Sewers North Division.

. EXPENDITURES.

Paid for—				
Labor	\$2,476	65		
Constructing sew-	• •			
ers (contractors).	3,755	55		
Coal	38	25		
Wooden covers	73	5 0		
Sewer pipe	46	56		
Sewer bricks	8	85		
Sewer cement	8	88		
Sewerage teaming	184	95		
Catch-basins	1,626	2 8		
Cash payments Deduct—	8,219	47		
Amount chargeable				
to house drains				
for slants	176	4 0		
-			\$ 8,0 43	07
Acc't Sewers South I	Division.			
Paid for—				
Labor	6,322	72		
Constructing sew-	-,	• –		
ers (contractors).	25,3 2 1	14		
Plumbing	151			
Railroad fare	2	15		
Moving water main,	117	00		
Wooden covers	535	5 0		
Iron covers	9	25		
Sewer pipe	398	74		
Sewer brick	568	4 3		
Sand	60	00		
Cement	271	4 0		
Carried forward,	\$33,758	02	\$8,043	 07

D 1. 6	***	60	* 0.04 0	^=
Brought forward,	\$33,758		\$8,043	07
Teaming	465			
Catch-basins	16,727	4 5		
Depreciation of	0.5	^^		
stock	35	00		
Cash payments	50,985	69		
Deduct—				
Amount chargeable				
to house drains				
for slants and	1,094	ĔΛ		
junctions	1,004		4 9,891	10
Acc't Sewers West Da	เขเรเกท		10,001	
Paid for—				
Labor	9,484	84		
Plumbing	1,045			
Constructing sew-	1,010	UI		
ers (contractors)	104,874	90		
Earth filling		75		
Moving water main.		26		
Wooden covers	1,508			
Sewer pipe	571			
Bricks	143			
Sand		00		
		25		
Cement				
Teaming	540			
Catch-basins	10,919	3 Z		
Depreciation of stock	99	00		
- Stock				
Cash payments	129,387	85		
Deduct—	•			
Amount chargeable				
to house drains				
for slants and				
junctions	3,267	80		
			126,120	05
Corried forward				
Carried forward,			\$184,054	O1

Brought forward, \$184,054 31

Paid for-				
Labor	\$17,562	05		
Books, printing and	• /			
stationery	200	95		
Draughting tools				
and material	95	68		
Slants and junc-				
tions	4,538	70		
Sewer pipe	277	00		
Paving	105	10		
Plumbing	3	00		
Relaying drains	106	57		
Rubber boots	5	00		
Teaming	647	22		
-			23,541	27
Paid for—				
Labor.	6,237	36		
	6,237 38			
Labor. Paving Oil	38			
Paving	38	06 74		
Paving Oil	38 23	06 74 60		
Paving Oil Lumber	38 23 13	06 74 60 35		
Paving	38 23 13 1,612	06 74 60 35 30		
Paving	38 23 13 1,612 132	06 74 60 35 30 84		
Paving	38 23 13 1,612 132 367	06 74 60 35 30 84 18		
Paving Oil Lumber Wooden covers Iron covers Sewer pipe Bricks	38 23 13 1,612 132 367 947 20 519	06 74 60 35 30 84 18 00 21		
Paving	38 23 13 1,612 132 367 947 20	06 74 60 35 30 84 18 00 21		
Paving	38 23 13 1,612 132 367 947 20 519 1,860	06 74 60 35 30 84 18 00 21 90		
Paving Oil Lumber. Wooden covers Iron covers. Sewer pipe Bricks Sand Cement Teaming	38 23 13 1,612 132 367 947 20 519	06 74 60 35 30 84 18 00 21 90		
Paving Oil Lumber. Wooden covers Iron covers. Sewer pipe Bricks Sand. Cement Teaming Depreciation of	38 23 13 1,612 132 367 947 20 519 1,860	06 74 60 35 30 84 18 00 21 90	11,810	54

Brought forward,			\$219,406	12			
Acc't Cleaning Sewers and Catch-basins.							
Paid for—							
Labor	\$39,312	79					
Rubber goods		22					
Tools and repairing	130						
Pails		75					
Paving	158						
Teaming	10,313	82					
Rope		88					
Candles		40					
Oil and grease		28					
Hardware		50					
Blacksmithing	.15						
Use of horse and	120	٠-					
wagon	18	00					
Printing	2	50					
Depreciation of							
stock	160	11					
4 10 7 1 11			50,264	65			
Acc't Intersections.							
Paid for—	10 505	•					
Labor	12,595						
Hardware	2	16					
Books and station-	0	00					
ery	_	90					
Paving	146						
Wooden covers	3,281						
Iron covers	6,328						
Sewer pipe		63					
Bricks	5,401						
Sand	229 .						
Cement	2,454						
Teaming	1,316	65					
Depreciation of stock	140	00					
Stock	140		31,979	06			
			01,010				

Carried forward,

\$301,649 83

Brought forward,			\$301,649	83	
Acc't Sewer Office Expe	enses an	d S	alaries.		
Paid for					•
Car fare	\$ 351	67			
Postage	103				
Advertising	135	61			
Printing and sta-			•		
tionery	63	4 0			
One city directory.	. 5	00			
	658	94			
Sewer office salaries	16,884	13			
			17,543	07	
Acc't Sewerage Fund Salaries.	Propos	rttoi	nal Office	Expenses	and
Paid for—					
Books, printing and	779	79			
stationery	772	73 22			
Car fare	118				
Postage		56			
Newspapers One city directory.		00	•		
—-					
	980	06			
One-third salaries of					
Commissioners,					
Secretary, Book-					
keeper, and others	4,593	2 8	r r70	0.4	
			5,573	34	
Miscellaneous Expendit	tures.			•	
Paid to-					
River improvement					
sinking fund	5 00	00			
Sewerage sinking					
fund	500	00			*
Carried forward,	\$1,000	00	\$324,766	24	

Brought forward,	\$1,000	00	\$324,766	24		
Sundry persons, for money advanced.	14,743	60				
Used in sewerage work for private parties, for—	11,110	v				
Labor	2,913	16				
Cement	766	49				
Wooden covers	1,510	41				
Iron covers	2,768	96				
Brick	3;251	76				
Sand	161	00				
Deduct for brick	27,115	38				
used in 1887 from balance of 1886	664	73	26,450	65		
Total expenditures,		•			\$351,216	89

APPROPRIATION FUND.

RECEIPTS.

Acc't Improved Stree	ets.	
Amount appropria-		
ted by City Coun-		
cil	\$150,000	00
Amount received		
for paving and in-		
specting	9,803	94
Amount received		
for use of steam		
roller	1,713	18
Amount received		
for stone	317	09
Carried forward,	\$161,834	21

Brought forward, Amount received	\$161,834	21	
for gravel	9	90	
Amount received for iron	33	00	·
Amount received for labor	44	70	
Amount received for removing ob-			
structions	66	50	** **********************************
-		`	\$161,988 31
Acc't Unimproved St	reets.		
Amount appropriated by City Coun-			
cil	125,5 00	00	
for constructing sidewalks	16,856	27	
Amount received for planking	1.,,000		
street	34	50	
for nails and plumbing	18	4 0	4.0.400.45
-			142,409 17
Acc't Street Permits.	•		
Amount received for paving and			
inspecting Amount received	10,863	96	
for occupying streets	5,161	00	

Carried forward, \$16,024 96 \$304,397 48

Brought forward,	\$16,024	96	\$304,397	48		
Amount received	£ 17	00				
for scale permits. Amount received	91	vv				
for vault permits.	30	00				
_	16,111	96				
Deduct amount	·					
transferred from	K 400	5 9				
special deposits.	5,498		10,613	43		
Ace't House massing I			,			
Acc't House-moving I	ermus.					
Amount received						
from house-mov- ing permits			3,183	00		
ing permits			0,100	00		
Acc't Bridge Repairs.						
Amount appropria-						
ted by City Coun-						
cil	55,05 0	00	•			
Amount received						
for damages to bridges	830	KK				
Amount received	650	υυ				
for scrap iron	5,397	45				
Amount received	,					
for lumber	58	46				
Amount received						
for labor	99	12				
Amount received	900	20				
for iron beams Amount received	326	39				
on account plank-						
ing Division street						
bridge	209	95				
_			61,971	92	•	
Carried forward,			\$380,165	83		

Brought forward,			\$380,165 83	
Acc't Viaduct Repair. Amount appropriated by City Council Amount received from C. & G. W. R. R. Co.—	\$16,950	00		
For engineering and inspecting For constructing	1,069	45		
sidewalk	104	10		
For paving approach to West Twelfth	104	10		
street viaduct	710	79		
Amount received				
from C. & NW.				
R'y Co. towards				
maintaining State				
street viaduct	400	00		
			19 ,234 34	
Acc't Street Lamps.				
Amount received				
for old posts	9	00		
Amount received				
for scrap iron	137	36		
Amount received				
for castings and				
fittings	7	65		
Amount received				
for re-setting				
post	4	77		
Amount received				
for damages	12	00		
Amount received				
from Comptroller,	20,984	70		
• -			21,155 48	
Carried forward,			\$420,555 65	

Carried forward,

\$420,555 65

Brought forward,			\$420,555	65
Acc't Public Building	s.			
Amount appropriated by City Council	\$74,600	00		
ry for extra eleva-				
tor service	407	25	75,007	95
4 1. T 161 C.	T7: 1 .		10,001	20
Acc't Twelfth Street	Viaduci.			
Amount received from C., R. I. & P. and L. S. & M. S. R. R. Cos	10.770	F 0		
Amount received	10,779	90		
for labor	22	5 0		
_			10,802	00
Acc't Eighteenth Stre	et Viadu	ct.		
Amount received from C. & A. R. R. Co Amount received from A. T. & S. F.	6,830			
R'y Co	627	2 0	7,457	70
Acc't State Street Via	aduct.		1,101	•
Amount received from C. & NW R. R. Co	103	00		
Amount appropria-				
ted by City Coun-	10.000	00		
	10,000	00	10,103	00

Brought forward,		\$523,925	6 0
Acc't Eighteenth Stre	et Bridge.		
Amount appropriated by City Council	\$14,500 00 11,163 76	25,663	76
Acc't Wells Street Br	ridge.		
Amount received from N. C. Street R. R. Co		24	75
Acc't Sidewalks, Gene	eral Repairs.		
Amount appropriated by City Council	10,000 00		
from Comptroller,	260 00		
Amount received for labor and material	135 25		
-		10,395	25
Acc't Public Benefits.			
Amount appropriated by City Council	220,919 67		
Amount received	220,010 01		
from Comptroller,	23,366 59	244,286	26
Miscellaneous Approp	briations.		
Kedzie avenue re-	2,500 00		
Carried forward,	\$2,5 00 00	\$804,295	62

Brought forward,	\$2,5 00	00	\$804,295	62
Sidewalk intersec- tions, North Divi-				
sion Sidewalk intersec-	2,500	00		٠
tions, South Divi-				
sion	3,000	00		
tions, West Divi-				
sion	4,500	00		
State street bridge Twelfth street	27,190	00		
bridge	30,000	00		
Jackson street				
bridge	5 0,000	00		
Carpenter street	•			
bridge	4,200	00		
Blackhawk street				•
bridge	8,300	00		
Fourteenth street	-,			
bridge	45,800	00		
Webster avenue	20,000	•		
bridge	8,300	00		
Oak street bridge	8,300			
Western avenue and	0,000	00		
Kinzie street				
viaduct	16,700	ΛΛ		
May and Kinzie	10,100	vv		
street viaduct	9.400	ΔΔ		
	8,400	w		
Indiana street via-	00 000	00		
, duct	20,000	W		
Raising buildings at Twelfth street				
viaduct	15,000	00		
Ogden ditch dam	200			
				
Carried forward,	\$254,89 0	00	\$804,295	62

Brought forward, \$254,890 00 \$804,295 62

Canal numping				
Canal pumping works	51,50 0	00		
	91,5 00	vv		
Bridge tenders' sal-	20 200			
aries	59,5 00			
Chicago harbor	41,000	00		
La Salle street tun-				
nel	2,000	00		
Washington street				
tunnel	10,000	00		
Fullerton avenue	•			
conduit	21,000	00		
Public parks	7,950	00		
Salaries	71,370	00		
Street Department				
office expenses	700	00		
Map Department				
office expenses	225	00		
Proportional sala-				
ries and office ex-				
	5,760	nn		
penses	5,100	vv		
Deficiency in collec-	40.400			
tion of taxes	10,468	¥ 8		
_			536,363	28

Miscellaneous Receipts.

Carried forward, \$60,450 28 \$1,340,658 90

\$60,450	28 5	\$1,340,658	90
2,167	57		
990	00		
		63,607	85
			•
		5,5 00	00
	_		-\$1,409,766 75
	2,167	\$60,450 28 \$ 2,167 57 990 00	990 00 63,607

EXPENDITURES.

Acc't Improved Streets.

Paid for—		
Labor	73, 888	70
Gravel	1,223	93
Tools and repairing	407	68
Repairing steam		
roller	1,051	85
Tan bark	48	50
Advertising	27	34
Lanterns	4	25
Sprinkling	17	25
Paving-blocks and		
paving	2,693	25
Oil	1	6 0
Nails and general		
hardware	252	26
Carried forward,	\$79,616	61

Brought forward,	\$79,616	61		
Use of horse and				
wagon	31	50		
Cinders	84	60		
Sweeping and clean-				
ing streets	86,986	3 8		
Lumber	1,270	18		
Curbing and filling.	316	6 8		
Stove	12	5 0		
Coal	194	00		
Letter heads	12	50		
Roofing	10	00		
Plumbing	9	4 0		
Canvas	4	75		
Stone and macadam	1,733	90		
_ -			\$170,283	00
Acc't Unimproved Str	reets.			
Paid for—				
Labor	88,332	71		
Nails and general				
hardware	3,895	65		
Lumber	32,754	09		

Tools and repairing

Stone and macadam Earth filling.....

Advertising

Blacksmithing.....

Paving-blocks

Cindering streets...
Atlas of Cicero....

Drafting material...

Carried forward, \$128,120 14 \$170,283 00

616 48 760 00

 $265 40 \\ 262 50$

75 12 00

3 85

8 84

 $\begin{array}{ccc} 250 & 00 \\ 872 & 00 \end{array}$

 $\frac{30}{55} \frac{00}{87}$

Brought forward, Rebates.		1 4 60	\$170,283	00
Ground rent	464	50		
Express charges		55		
_			128,591	79
Acc't Kedzie Avenue	Repairs.			
Paid for improving roadway			2,368	00
Acc't Sidewalk Inter. Paid for—	sections-	Noi	rth Division	n .
Labor	528	5 0		
Lumber	91	28		
Hardware	29			
_			649	18
Acc't Sidewalk Inters	sections—	Sou	th Division	ı.
Labor	1,753	09		
Lumber				
Hardware		00		
			2,155	1 0
Acc't Sidewalk Inter-	sections—	We	st Division	
Labor	4.028	32		
Lumber				
Hardware		40		
-			4,627	96
Acc't Sidewalks—Gen Paid for—	neral Rep	airs	5.	
Labor	8,138	77		
Lumber	483			
Hardware	14	25		
Car fare	110			
Postage	10	00		
Stationery	12	50		
-			8,769 7	73
Carried forward,			\$317,445	06

Brought forward,			\$317,445	06
Acc't Public Building	s.			
(a-Maintaining	•			
City Hall.)				
Paid for—				
Labor	\$23,12 0	70		
Hardware	230			
Leather	4	90		
Office furniture	696	76		
Disinfectants	110	73		
Sawdust	29	00		
Sprinkling	87	15		
Oil cloth	1	20		
Soap, brooms, dust-				
ers, etc	5 4 3	34		
Repairing clock	4	5 0		
Two Kelly water				
closets	150	00		
Locksmithing	4	5 0		
Copper-work	14	3 0		
Paint and oil	$\boldsymbol{227}$	05		
Lumber	4 11	75		
Plumbing	332	86		
Sand	9	75		
Advertising	9	18		
Railings	79	00		
Glass and glazing	42	98		
Iron-work	48	71		
Repairing steam				
pi pes	150	2 0		
Lettering doors		5 0		
Polish	18	00		
Waste	61			
Cement	10			
Tools	13	92	20.400	
			$26,\!436$	03

Carried forward,

\$343,881 09

Brought forward,			\$343,881	09
(b—Operating City				
`Hall.)				
Paid for—				
Labor	\$20,655	80		
Coal	23,836	35		
Ice	132	00		
Repairing elevators	31	53		
Lumber	46	00		
Grate bars	695	83		
Machine work	268	09		
Advertising	7	36		
Repairing tele-				
phones	51	03		
Fire-brick and clay	52 8	67		
Engineer supplies	129	68		
Repairing electric				
engine	376	80		
Hardware	20	01		
Rope	20	4 3		
Gas bills	568	6 0		
Electric lamps and				
fittings	1,870	58		
Brick	82	00		
Repairing radiators.	32	33		
Changing dynamos	2,500	00		
Repairing boilers	1,095	10		
Machinery	247	80		
Cement and lime	53	80		
Waste and packing	198	20		
Furnace doors	4	23		
Oil and grease	623	14		
Steam fitting	155	5 8		
<u> </u>			54,23 0	94
Carried forward,		_	\$398,112	03

Brought forward,			\$398,112	03
Acc't Holstein Park.				
Paid for—				
Earth filling			575	40
Acc't Ellis Park.				
Paid for—				
Labor	\$670	00		
Constructing walks,	358			
One rake	1	00		
Seeds	3	75		
			1,033	02
Acc't Lake Park.				
Paid for-				
Labor	1,858	5 0		
Paint and oil	8	46		
Hardware and tools,	17	80		
Hose and couplings,	48	25		
Plumbing	204	18		
Lumber	24	38		
One stove	8	00		
			2,169	57
Acc't Union Square.				
Paid for—				
Earth filling	90	00		
Tools	2	25		
Labor	93	00		
			185	25
Acc't Campbell Park.				
Paid for—				
Repairing fountain,	138	00		
Trees	50	00		
			188	00

Carried forward,

\$402,263 27

Brought forward,			\$402,263	27
Acc't Douglas Monum	ent Squa	re.		
Paid for—				
Labor	\$605	00		
Iron fence	172	5 0		
Plumbing	10	58		
Hose and coupling.	41	18		
Tools	3	5 0		
Seeds	1	25		
		—	834	01
Acc't Aldine Square.				
Paid for—				
Labor	600	00		
Coal	15	00		
Hose, etc	16	2 0		
Refitting hot house,	63	79		
		—	694	99
Acc't Washington Squ	are.			
Paid for—				
Labor				
	959	81		
Plumbing	959 513			
_		48		
Hose, etc	513 38	48		
Plumbing	513 38	48 90 50		
Hose, etc	513 38 6	48 90 50 00		
Hose, etc	513 38 6 15	48 90 50 00	1,747	69
Hose, etc	513 38 6 15	48 90 50 00	1,747	69
Hose, etc	513 38 6 15	48 90 50 00	1,747	69
Hose, etc	513 38 6 15	48 90 50 00	1,747	69
Hose, etc	513 38 6 15	48 90 50 00	1,747	69
Hose, etc	513 38 6 15	48 90 50 00	1,747	69

\$648,262 03

Carried forward,

Brought forward,

Carried forward,

\$648,262 03

Acc't House Moving Po	ermits.				
Paid for—					
Salaries	\$2,116	00			
Keeping horse	72				
Printing and sta-					
tionery	33	25		•	
·		_	2,221	25	
Acc't Street Department Paid for—	st Office.	Expe	nses.		
Books, printing and					
stationery	171	37			
Repairing survey-					
ing instruments	3 0	25			
Car fare	13 0	77			
Binding atlas	4 0	00			
Draughting mate-					
rial	20	41			
Two city directo-					
ries	10	00.		•	
Postage	279	69			
Legal expenses	_	00			
Hardware	6	00	200	40	
			692	49	
Acc't Map Office Expen	nses.				
Paid for—					
Drawing material	203				
One city directory	5	00	909	en	
Acc't Street Permits.		_	208	00	
Paid for—					
Inspection and la-	F 400	00			
bor	5,462				
Paving	1,159				
Printing		00			
Rebate		2 5	6,67 0	72	
			0,010	· -	

\$658,055 09

Brought forward,			\$658,055	09
Acc't Special Assessme	nts.			
Paid for—				
Advertising	\$6,351	64		
Engineering and	• •			
inspecting	6,452	27		
Expert services	5,640			
Stenographing and	·			
clerical services	2,808	64		
Commissioners,				
making assess-	•			
ments	6,237	00		
Postage and enve-				
lopes	809	5 0		
Car fare	1,016	00		
Legal expenses	7,950	4 5		
Blank books, print-				
ing and stationery	489	70		
Livery	12	00		
County Treasurer,				
collecting	21,291	11		
Posting atlas	75	00		
Two stools	4	83		
One city directory	5	00		
Tin boxes	10	56		
Hardware	4	2 0	20.120	0-
And Colombia			59,158	81
Acc't Salaries.				
Paid employes—	00 =0:	0.0		
Street Department.	28,704	83		
City Engineer's De-	= 000	F 0		
partment	7,660	56		
Special Assessment	01 000	00		
Department	21,682			
Map Department	9,186	00	67,233	go
-				
Carried forward,			\$784,447	59

\$811,564 80

Brought forward, One-third salaries of Commissioners, Secretary, Book- keeper, and others			\$784,447 59 4,518 32	
Acc't Proportional Office	Expen	ses		
Paid for—				
Car fare	\$84			
Postage	17			
Stationery	100			
Annual report	885			
Lithographing	99	50	1 100 10	
Acc't Street Lambs			1,186 59	
Acc't Street Lamps. Paid for—				
Labor	4,778	43		
Printing and adver-				
tising	92			
Lamp posts	2,42 0	35		
Street signs	2,631	33		
Tin and tinners'				
supplies	534			
Charcoal.	40			
Patterns	105			
Tools and repairing	4	45		
Glass	3,838	1 2		
Lamp fixtures	4,836	36		
Horseshoeing and				
blacksmithing	63			
Solder	165			
Paint and oil	232	80		
Horse-keep	285	71		
Repairing harness	8	60		
Shop and barn rent	564	25		
Hardware	75 8	09		
Coke	26	50		
Gas bills	26	80		
			21,412 30	

Carried forward,

Brought forward,			\$811,564	80
Acc't Washington Str	eet Tunn	el.		
Paid for—				
Labor	\$1,95 0	07		
Coal	184	96		
Lumber	12	94		
Electric lamps and				
fittings	230	83		
Reflectors	37	56		
Steam—and gas fit-	0.4			
ting		88		
Step-ladder		50		
Plumbing	_	25		
Repairing pump		25		
Sign painting		5 0		
Salt	_	00		
Rubber goods	2	71		
Gauge glasses		68		
Castings	16	38	0.450	
-			2,473	91
Acc't La Salle Street	I unnel.			
Paid for—				
Labor	1,542			
Coal	86	57		
Electric lamps and	205	4.		
fittings	205			
One basket		60		
Tinware		50		
Engineer supplies		74		
Sign painting	1	50	1 975	97
4 1: 61: 11 1			1,875	01
Acc't Chicago Harbor.				
Paid for—				
Salaries of Harbor-	# 110	00		
masters and labor.	7,118			
Dredging	29,778			
Carried forward,	\$36,897	35	\$815,914	18

Teaming	Brought forward,	\$36,897	35	\$815,914	18
ments 6 90 Tug service 158 00 Paint and oil 3 67 Advertising and printing 24 70 Pulling piles 81 00 Engineer supplies 1 50 Repairing rowboat. 10 00 Acc't Bridge Repairs. 37,187 12 Acc't Bridge Repairs. 26,360 49 Tools and repairing Lumber 25,703 35 Electric lamps and fittings 212 90 Coal 3,661 25 Machine—and ironwork 3,391 72 Globes, burners, oil, etc 560 07 Chain 439 51 Hardware 1,469 48 Bolts and washers 239 79 Paint, oil and grease Piles and pile driving 10,858 65 Engineer and bridge supplies 523 77 Repairing bridge	Teaming	4	00		
Tug service					
Paint and oil. 3 67 Advertising and printing. 24 70 Pulling piles. 81 00 Engineer supplies. 1 50 Repairing rowboat. 10 00 ————————————————————————————————————	ments	6	90		
Advertising and printing	Tug service	158	00		
printing	Paint and oil	3	67		
printing	Advertising and				
Pulling piles. 81 00 Engineer supplies. 1 50 Repairing rowboat. 10 00 ————————————————————————————————————		24	70		
Engineer supplies 1 50 Repairing rowboat 10 00 37,187 12 Acc't Bridge Repairs. Paid for— 26,360 49 Labor		81	00		
Repairing rowboat.	~ .	1	5 0		
## Acc't Bridge Repairs. Paid for— Labor		10	00		
Acc't Bridge Repairs. Paid for— 26,360 49 Tools and repairing 44 50 Lumber				37.187	12
Paid for— 26,360 49 Tools and repairing 44 50 Lumber					
Labor					
Tools and repairing Lumber					
Tools and repairing Lumber	Labor	26,3 60	49		
Electric lamps and fittings. 212 90 Coal. 3,661 25 Machine—and ironwork. 3,391 72 Globes, burners, oil, etc. 560 07 Chain. 439 51 Hardware. 1,469 48 Bolts and washers. 239 79 Paint, oil and grease 1,702 80 Piles and pile driving. 10,858 65 Engineer and bridge supplies. 523 77 Repairing bridge	Tools and repairing	44	5 0		
fittings. 212 90 Coal. 3,661 25 Machine—and ironwork. 3,391 72 Globes, burners, oil, etc. 560 07 Chain. 439 51 Hardware. 1,469 48 Bolts and washers. 239 79 Paint, oil and grease 1,702 80 Piles and pile driving. 10,858 65 Engineer and bridge supplies. 523 77 Repairing bridge	Lumber	15,703	35		
Coal. 3,661 25 Machine—and ironwork. 3,391 72 Globes, burners, oil, etc. 560 07 Chain. 439 51 Hardware. 1,469 48 Bolts and washers. 239 79 Paint, oil and grease 1,702 80 Piles and pile driving. 10,858 65 Engineer and bridge supplies. 523 77 Repairing bridge	Electric lamps and				
Coal. 3,661 25 Machine—and ironwork. 3,391 72 Globes, burners, oil, etc. 560 07 Chain. 439 51 Hardware. 1,469 48 Bolts and washers. 239 79 Paint, oil and grease 1,702 80 Piles and pile driving. 10,858 65 Engineer and bridge supplies. 523 77 Repairing bridge	_	212	9 0		
Machine—and ironwork. 3,391 72 Globes, burners, oil, etc. 560 07 Chain. 439 51 Hardware. 1,469 48 Bolts and washers. 239 79 Paint, oil and grease 1,702 80 Piles and pile driving. 10,858 65 Engineer and bridge supplies. 523 77 Repairing bridge		3,661	2 5		
Globes, burners, 560 07 chain		•			
Globes, burners, 560 07 chain	work	3.391	72		
oil, etc. 560 07 Chain. 439 51 Hardware. 1,469 48 Bolts and washers. 239 79 Paint, oil and grease 1,702 80 Piles and pile driving. 10,858 65 Engineer and bridge 523 77 Repairing bridge		,			
Chain. 439 51 Hardware. 1,469 48 Bolts and washers. 239 79 Paint, oil and grease 1,702 80 Piles and pile driving. 10,858 65 Engineer and bridge 523 77 Repairing bridge	· · · · · · · · · · · · · · · · · · ·	560	07		
Hardware	•				
Bolts and washers . 239 79 Paint, oil and grease 1,702 80 Piles and pile driving					
Paint, oil and grease 1,702 80 Piles and pile driving. 10,858 65 Engineer and bridge supplies. 523 77 Repairing bridge		•			
Piles and pile driving					
ing	· · · · · · · · · · · · · · · · · · ·	1,102	00		
Engineer and bridge supplies 523 77 Repairing bridge	•	10.858	R5		
supplies 523 77 Repairing bridge		10,000	00		
Repairing bridge	9	502	77		
		020	• •		
989 18		950	1=		
houses					
Tan bark 2 00	ran bark	2			
Carried forward, \$65,523 73 \$853,101 30	Carried forward,	\$65,523	73	\$853,101	3 0

BOOK-KEEPER'S STATEMENT.

Brought forward,	\$65,523	73	\$853,101	3 0	
Sign painting	3	75			
Sprinkling	105	00			
Tug service	14	00			
One door	1	5 0			
Car fare	10	00			
Salt	4	00			
Lead	10	56			
One hand cart	26	00			
Bricks	112	00			
Packing	3	7 5			
Cement and lime	31	25			
Clocks and repair-					
ing	40	75			
Printing and adver-					
tising	39	5 0			
Stoves and pipe	68	89			
Bridge-wheels	235	94			
Plumbing	30	49			
Rubber goods	16	35			
Paving	176	12			
Stone	165	00			
Freight	3	05			
One bell	3	00			
Damages	137	00			
Oil cloth	4	68			
_			66,766	31	
Acc't Viaduct Repairs	•				
Paid for—					
Labor	11,372				
Iron work	1,861				
Paving	710	79			
Inspecting iron	75 0	00			
_			14,694	01	

Carried forward,

\$934,561 62

Brought forward,			\$934,561	62
Acc't Bridge Tenders'	Salaries.			
Paid for—				
Attending bridges			56,726	36
Acc't Fullerton Avenue	Condui	t.		
Paid for—				
Labor	\$7,679	30		
Coal	6,562	44		
Teaming		25		
Glass and glazing	13	50		
Repairing machin-				
ery	103	83		
Iron work	45	6 0		
Paint, oil and grease.	483	71		
Lamps, globes, etc	13	40		
Fire brick and clay	54	5 0		
Hose and couplings	15	86		
Lime	_	80		
Soap	2	79		
Gasket and packing		66		
Hardware	2	40		
Steam fitting	9	52		
Repairing roof	182	50		
Tools and repairing	10	62		
Advertising	8	98		
			15,290	66
Acc't Canal Pumping Paid for	Works.			
Labor	13,698	70		
Coal	24,771			
Meals		80		
Teaming.		53		
Engineer supplies.				

Carried forward, \$38,532 86 \$1,006,578 64

Brought forward, Repairing machin-	\$38,532	86	\$1,006,578	8 6-
ery	313	97		
Oil and grease	798			
Building wire dam	480			
Use of machinery.	453			
Bolts and washers.		36		
Steam fitting	_	41		
Castings		58		
Advertising		58		
Grate bar castings		85		
Rubber goods		18		
Lumber	282			
Tools		90		
Fire brick and clay.		70		
Lamps, globes, etc.	-	68		
Hardware.		77		
Iron work		00		
Gasket and packing		58		
Acc't Canal Locks. Paid for—			41,369	-
Attending lock	2,1 00	00)	
Building house at	04.0	0.0		
lock	218			
Paint for same	11	$\frac{25}{}$	2,329	25
Acc't Tanalfth Canad	Vàn doich		2,020	20
Acc't Twelfth Street Paid for—	ı ıaauct.			
Balance superstruc-				
ture	16,579			
Masonry	771			
Lumber	1,188			
Labor	2,476			
Hardware	-	82		
Plumbing		76		
Two lamp posts	68	OC		-0
-			21,198	
Carried forward,		9	\$1,071,476	32

Brought forward,

\$1,071,476 32

Acc't Indiana Street V	iaduct.		
Paid for—	•		
Labor	\$3,923	19	
Blue prints	31	90	
Advertising	10	24	
Teaming	113	35	
Lumber	4	80	
Hardware	2	17	
Sand	30	00	
Engineer supplies	29	41	
Cement	93	95	
Stone rollers	3	00	
Stone coping and			
masonry	1,281	39	
Iron work	39	5 0	
Superstructure	25,500	00	
_			31,062 90
Acc't Eighteenth Stree Paid for— Engineering and	r viaau	τ.	
draughting Printing specifica-	606	20	
tions	39	75	
Blue prints		35	
Teaming		82	
Substructure	935		
_		_	1,595 80
Acc't State Street Via	duct		
Paid for—			
Lumber	3,522		
Bolts and washers	618	00	•
Labor	3,487	24	
Carried forward,	\$7,627	57	\$1,104,135 02

Brought forward,	\$7,627	57	\$1,104,13	5 02
Teaming	125		,	
Hardware	173	31		
Cement	82	5 0		
Paint and oil	76	80		
Castings	486	23		
Bricks	25	5 0		
Iron work		5 0		
Advertising	9	23		
			8,632	44
Acc't Centre Avenue V	induct			
Paid for—				
Constructing side-				
walk			132	64
Acc't Raising Building (At Twelfth Street viaduct.) Paid for—	rs.			
Assessing damages.	5 00	00		
Appraising cost of				
raising buildings	300	00		
Damages	1,600	00		
-			2,400	00
Acc't Jackson Street Bi	ridge.			
Paid for—				
Advertising	47	20		
Engineering, drau't-				
ing and labor	3,020	23		
Printing specifica-	•			
tions	62	55		
Blue prints	63	36		
Substructure	49,806			
Lumber	•	06		
Sewerage	949			
			54,046	59
Carried forward,		\$	1,169,346	
• • •		,	•	

Brought forward,		\$	1,169,346	69
Acc't Fourteenth Street	Bridge.			
Paid for—	Ū			
Expert services	\$ 250	00		
Blue prints		85		
• —	<u></u>		251	85
Acc't State Street Bria	lge.			
Paid for—	·			
Lumber	514	34		
Labor	2,290			
Superstructure	24,440			•
Teaming		65		
Hardware and iron.		68		
Operating machin-	20	90		
ery	2,942	00		
Plumbing	122			
Piles and driving		~ .		
piles	712	5 0		
Use of scow and tug	327			
Inspecting iron	180		•	
Stone	969			
Chain		64		
Cement		00		
Sand		00		
Blue prints		98		
——————————————————————————————————————			32,602	42
Acc't Eighteenth Stree	t Bridge	,_	,	
Paid for—		•		
Engineering,				
draughting and				
labor	2,2 99	87		
Printing specifica-				
tions		65		
Advertising	37	47		
Blue prints		11		
Substructure	29,907	00		
Use of scow	153	80		2.0
			32,457	90
Carried forward,		\$	1,234,658	86

Brought forward,			\$	1,234,658	86
Acc't Twelfth Street	Bridg	ŗe.			
Paid for—					
Labor	\$	592	87		
Operating machin-	•				
ery	4	,369	00		
Superstructure		,300			
Inspecting iron		390			
Lumber		9	90		
Belting		30	40		
Iron-work		439	14		
Bridge bell		5 0	00		
Electric light plant		150	00		
- · ·				33,332	26
Paid for— Traveling expenses. Acc't Ogden Ditch Da Paid— Salary of watchman For planting trees.	m.	200 29	00 25	24	75 25
Acc't Randolph Street	t Bri	dge-	-Ma	chinery.	
Paid for—					
Advertising		4	00		
Blue prints		1	75		
Printing specifica-					
tions		5	5 0		
Draughting and					
labor		95	00		
				106	25
			-	1 000 071	
Carried forward,			\$	1,268,351	37

Brought forward,		\$1,	268,351	37
Acc't Madison Street L	Bridge—.	Mach	inery.	
Paid for—			-	
Advertising	\$4	00		
Blue prints	•	74		
Printing specifica-	-	•-		
tions	5	50		
Draughting		00		
			36	24
Acc't Special Permit L	eposits.			
For rebates			500	00
Acc't Electric Light Pi	lant.			
Paid for—				
Labor	1,145	55		
Bricks	297			
Teaming	34	43		
Cement and lime	56	25		
Lumber	193	35		
Iron beams	15 0	79		
Sand	13	5 0		
Hardware	3	3 6		
Felting sidewalk	21	60		
			1,916	33
Acc't West Division Po	ound.			
Paid for—				
Labor	707	2 4		
Hardware	46			
Moving building	375			
Cleaning vault		00		
Lumber	346	16		
Doors, sash and	•			
blinds	20	20		
- Carried forward,	A # 20		,270,803	-0.4

Brought forward,	\$1,502	34	\$1,270,80	3 9	4
Roofing sheds		00	, , , ,		
Galvanized-iron pipe		75			
Painting and calcim-		••			
ining	168	٥٥			
Digging and sinking	100	UU			
	904	10			
well	384				
Pump and pipe		11			
Sundries	3	24	0.40=		
			2,167	57	
Total expenditures,		_		9	51,272,971 51
CIT	Y HAL	L	FUND.		
	RECEI	PTS			
Amount appropria-					
ted by City Coun-			•		
cil			10,200	00	
Amount received			10,200	•	
from Ellithorpe					
Air Brake Co. for					
			0	00	
glass			8	vv	
Amount received					
from Public			04.5	•	
Library			917	90	
Total receipts,		-			\$11,126 90
7	EXPENDI	THE	RES.		
Paid—					
Smith & Crimp in			4 770	00	
full for plastering.			4,753	90	
Ellithorpe Air Brake					
Co. in full for ele-					
vators for Public					
Library			374	01	
Carried forward,		-	\$5,127	91	

Brought forward, Corboy, Wingrave & McNaghten Co. for pipe and rub- ber tubings Sprague, Smith & Co. for glass On acc't of furniture			\$5,127	18 33	
MISCEL	LANEOU	S EX	KPENSES.		
Paid for					
Labor	\$4 91	70			
Hardware	102				
Electric light fittings	22	46			
Iron-work	150	00			
Vault door	95	00			
Concrete	13	75			
Tank plates	61	90			
Railing for rotunda.	16 0	00			
Stone coping.	207	20			
Plumbing	16	73			
Decorating.	250	00			
			1,571	65	
Total expenditures,					\$7,991 35
•				=	
HYD	E PAR	KI	FUND.		
Amount received					
from water rents.	2,620	52			
Amount received					
from tapping per-					
mits	45	50			
			2,666	02	
Amount received			110	F ()	
from drain permits			112		
Total receipts,					\$2,778 52
•					a bbanu.

TRIAL BALANCE.

LEDGER, DEPARTMENT OF PUBLIC WORKS, DECEMBER 31ST, 1887.

	Dr.		Cr.	
Water fund	\$ 1,080,151	63		
Water works	11,393,421			
Water works income	. ,		\$19,762,774	62
Water fund, suspended ac-			. , ,	
counts	180,292	72		
Water fund, gen'l taxes	•		2,713,878 5	53
Water loan bonds, 6 per			• •	
cent			132,000 (00
Water loan bonds, 7 per			·	
cent			3,490,000	00
Water loan bonds, 3,65 per				
cent			333, 000 (00
Water loan bonds cancel'd,			859,000 (00
Water loan interest	6,198,884	42		
Water works expense and				
repairs	7,875,215	42		
Refunding loan account	343,280	00		
American Exchange Na-				
tional Bank, N. Y	119,419	86		
F. C. Meyer, book-keeper,	300	00		
R. N. Pearson, cashier	691	88		
Meter department, stock				
account	16,572	11		
Water works shop, stock				
account	5,634	77		
Tapping department, stock				
account	5,701	24		
Water pipe and special				
castings	109,312	00		
Cement account	7	5 0		
Carried forward,	\$27,328,885	29	\$27,290,653	 15

Brought forward,	\$27,328,885	29 .	\$27,290,653	15
Sewer pipe account	300	00		
Lead account	2,656	00		
Brick account	17	00		
Ogden, Sheldon & Co			699	25
Barrett, Todd & Cochran			250	00
John Tyrrell			150	00
C. J. L. Meyer			200	00
West Chicago Park Com-				
missioners			1,130	57
S. Meyers			1,313	77
S. H. Wheeler			250	32
Julia T. Porter			185	90
Chicago Canal & Dock Co.			1,166	43
Adele F. Adams			638	10
Clara F. Bass			1,195	80
J. Q. Adams			124	69
Conrad Seipp			431	00
J. J. Mitchell			399	4 0
E. A. Cummings & Co			916	82
Baird & Bradley			1,029	48
Little Sisters of the Poor			500	00
J. U. Borden			1,629	28
C. & G. W. R'y Co			882	00
Edson Keith			3,177	61
Leslie Carter, trustee			2,088	15
C. L. Bonney			589	70
Benjamin Shurtleff			274	27
C. S. Bissell			290	18
W. F. Myrick			725	51
Board of Education			800	00
Jacobson & Tallman			563	56
Lamsen Bros			682	83
Walker & Armour			2,636	44
T. H. Watriss			4,847	55

Carried forward, \$27,331,858 29 \$27,320,421 76

\$34,434,950 43

Carried forward,

BOOK-KEEPER'S STATEMENT.

\$34,438,542 01

425

Brought forward, \$34,434,950 43 \$34,438,542 01

	T	
Wm. Dreiske	2,227	57
L. M. Malany	400	00
Thos. D. Lowther	250	00
H. H. Walker	450	00
Ogden, Sheldon & Co	900	00
West Chicago Park Com-		
missioners	8,458	07
Chicago Malleable Iron Co.	900	00
Board of Education	4,677	50
Estate of H. O. Stone	300	00
Vopicka & Kubin	232	00
Baird & Bradley	1,320	00
Joseph Klatscher	690	00
H. R. Durkee	525	00
Chicago Gas Light & Coke		
Co	620	00
Wm. Waller	285	00
E. Pardridge	. 790	00
Ernst H. Neidert	100	00
J. L. Lombard	5 80	00
Estate of C. H. McCormick	950	00
Lazarus Silverman	343	70
Morrisson, Plummer & Co.	225	00
E. W. Morrison	500	00
Leopold Mayer	500	00
John G. Shortall	500	00
C. R. and A. B. Dewey	500	00
Presbyterian Theological		
Seminary	1,397	5 0
Theodore Lattan	100	00
Geo. L. Dunlap	500	00
Jos. Downey	200	00
L. Schoenbrunn.	62	5 0
L. Morgenthau	62	50

Brought forward,	\$34,434,95 0	43	\$34,468,088	35
J. J. Williams			100	00
E. W. Ackerstrom			100	00
C. C. Collins.			500	00
W. A. Fuller			200	00
Chas. Aug. Woerner			100	00
James Arthur			125	00
Wm. M. Dee & Son			261	00
W. J. Anderson			500	00
A. H. Towner			320	00
C. W. Pardridge			220	5 0
Sewer maintenance acc't	35,564	42		
Appropriation fund	329,381	80		
Unimproved streets			7,000	00
Public benefits			1,674	91
Special assessments				46
Street lamps	256	82		
Twelfth street viaduct			6,553	5 0
Indiana street viaduct			28,937	10
Raising buildings at				
Twelfth street viaduct			12,600	00
Jackson street bridge			95,418	41
Carpenter street bridge			4,200	00
Blackhawk street bridge			8,300	00
Fourteenth street bridge			45,548	15
Oak street bridge			8,300	00
Western avenue and Kin-				
zie street viaduct			16,700	00
May and Kinzie street				
viaduct			8,400	00
Eighteenth street viaduct.	-		5,861	90
Surplus account.			36,701	41
Webster avenue bridge			8,300	00
Street department stock				
account	5,982	32		

Carried forward, \$34,806,135 79 \$34,765,010 69

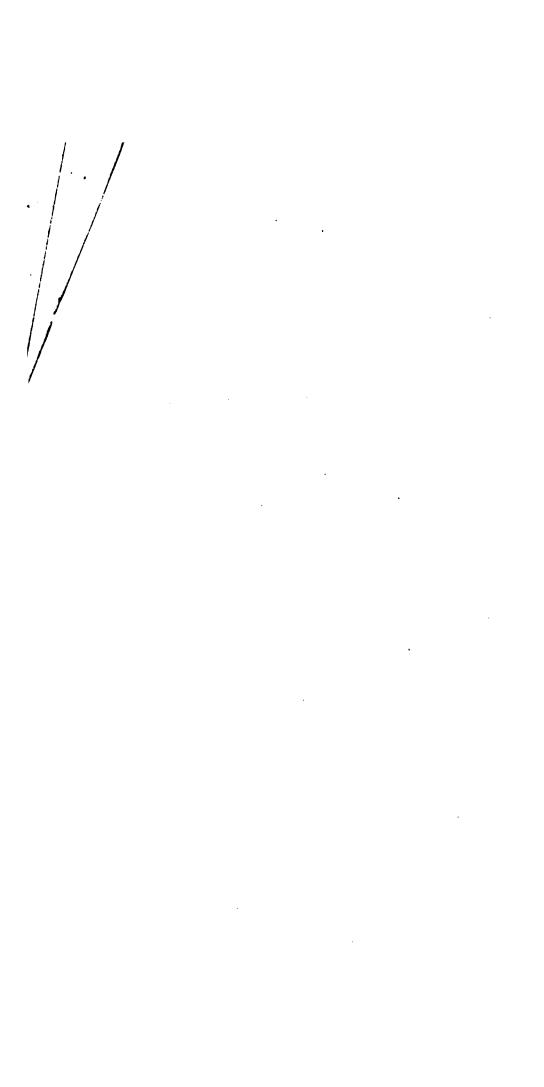
Brought forward,	\$34,806,135	79	\$34,765,010	69
Eighteenth street bridge.			26,872	28
Special depositors			6,868	
Madison street bridge-				
machinery			3,727	01
Randolph street bridge-				
machinery			3,656	99
City hall fund	5,039	97		
City hall appropriation			1,687,048	95
Board of Education			10,970	24
New city hall (cost of)	1,692,979	22		
Hyde Park fund	2,778	52		
Hyde Park, water rents			2,62 0	52
Hyde Park, tapping per-				
mits			45	5 0
Hyde Park, drain permits.			112	50
	\$36,506,933	50	\$36,506,933	50

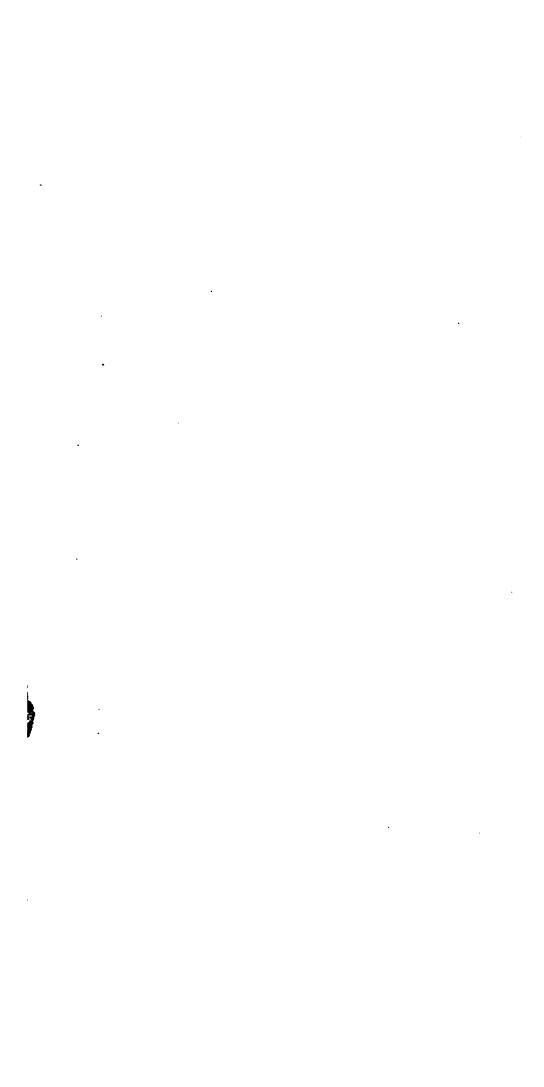
Respectfully submitted,

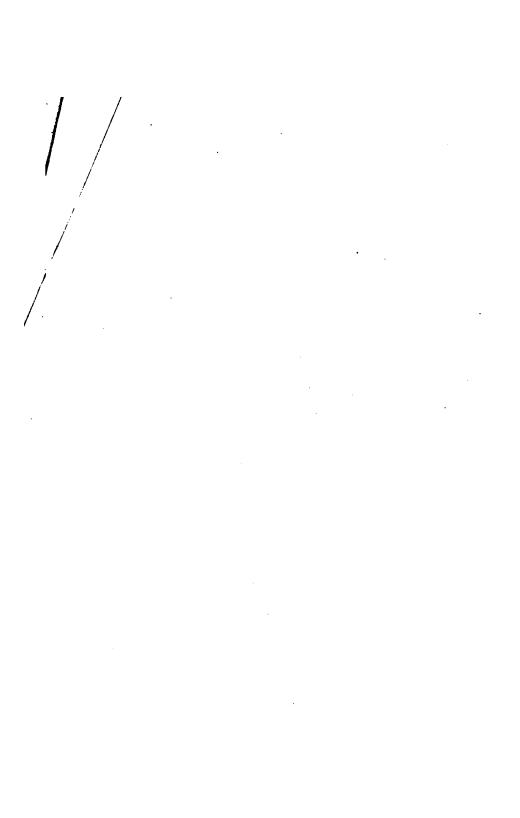
F. C. MEYER,

Book-keeper.

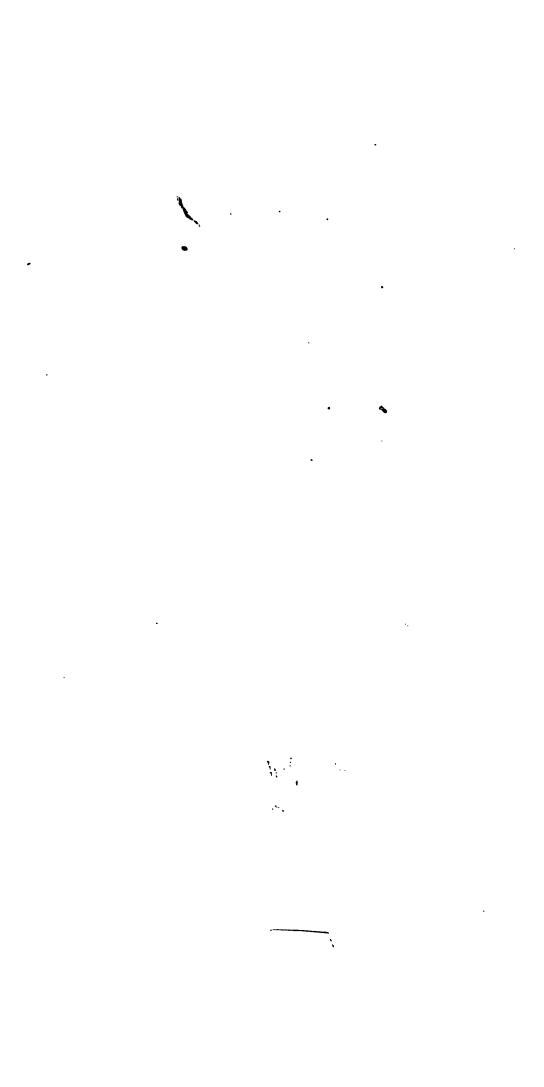


















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